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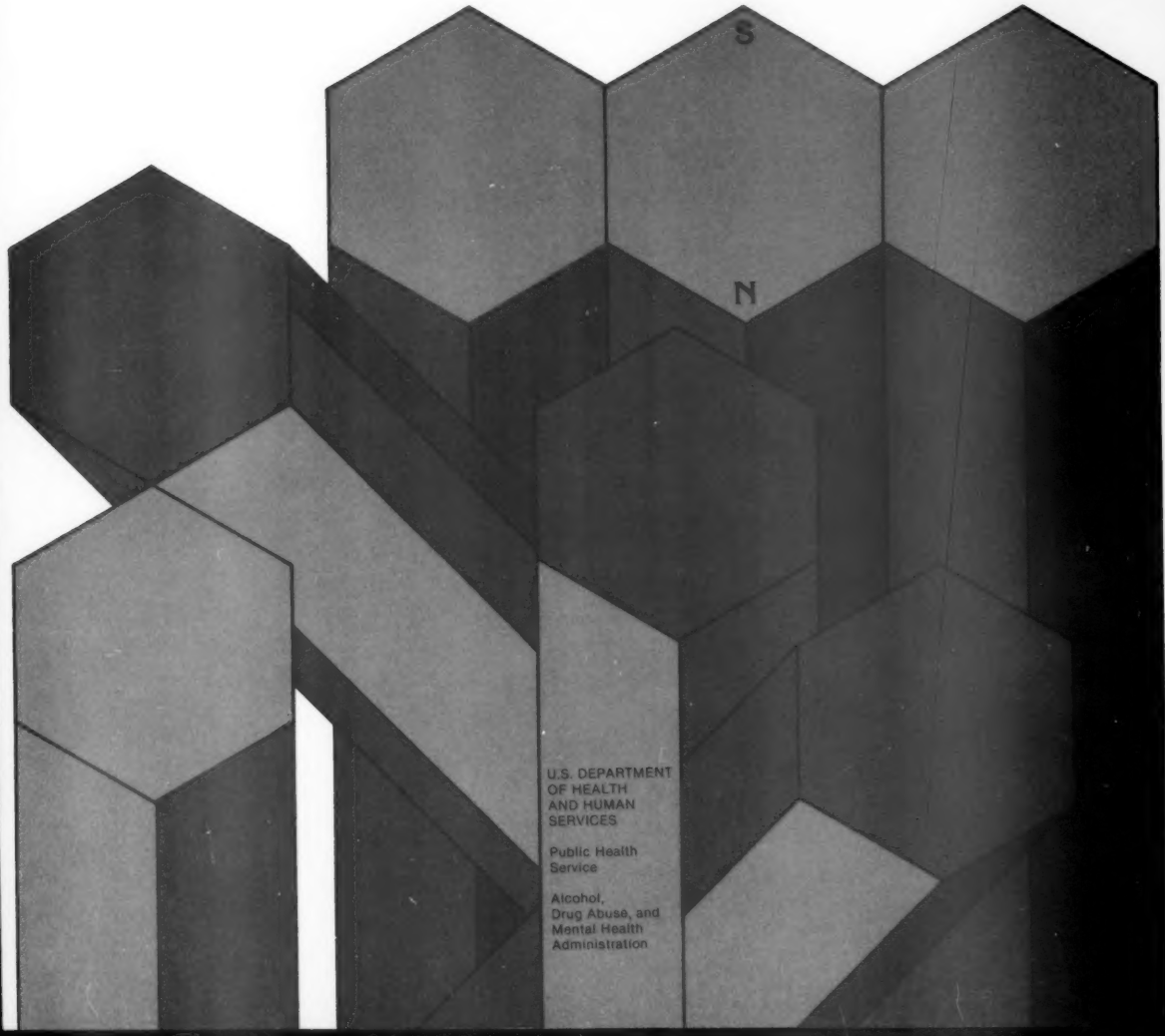
Psychopharmacology Abstracts



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Carrie Lee Rothgeb, *Editor*
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ABSTRACTS

PRECLINICAL PSYCOPHARMACOLOGY

01 CHEMICAL SYNTHESIS, ISOLATION AND CHARACTERIZATION

002996 Axelrod, Julius; Hirata, Fusao. Laboratory of Clinical Science, NIMH, Bethesda, MD 20205 **Phospholipid methylation and membrane function. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 6 p.

The role that methylation of membrane phospholipids plays in the transduction of signals through biomembranes is detailed. The enzymatic processes involved in the methylation and translocation of phospholipids in membranes, which made it possible to study the effects of agonists interacting with surface receptors on trandsuction of biological signals through the membrane, is discussed. The initial studies, which were carried out on beta-adrenergic receptors present on reticulocyte membranes, are described. The effect of phospholipid methylation on the availability of beta-adrenergic receptor sites in rat reticulocytes is discussed. The effects of phospholipid methylation on erythrocytes, on rat mast cells, and on lymphocyte mitogenesis are described. 4 references.

002997 Brantl, V.; Teschemacher, H. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **A material with opioid activity in bovine milk and milk products.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 306(3):301-304, 1979.

Chloroform/methanol extracts of lyophilized milk, commercially available dried milk, baby food, and casein digests were tested for opioid activity on the guinea-pig ileum longitudinal muscle/myenteric plexus preparation. Compounds with opioid activity were detected in certain batches of baby food, casein digest, and cow milk in considerably varying amounts. These compounds were resistant to peptidases. 14 references. (Author abstract modified)

002998 Burki, Hans R.; Fischer, Rudolf: Hunziker, Fritz; Kunzle, Franz; Petcher, Trevor J.; Schmutz, Jean; Weber, Hans Peter; White, Trevor G. Wander Research Institute, Wander Ltd., CH-3001 Bern, Switzerland **Dibenzo-epines: effect of the basic side-chain on neroleptic activity.** European Journal of Medicinal Chemistry. 13(5):479-485, 1978.

Structure/activity relationships in a seies of dibenzo(b,f)(1,4)thiazepines and dibenzo(b,f)(1,4oxazepines and dibenzo(b,e)(1,4)diazepines having different basic substituents in the 11 position were studied with reference to their neuroleptic activity. A high degree of structure specificity was found for the piperazinyl moiety as well as for the distances between the distal nitrogen atom of this group and the tricyclic ring system, which distances are probably of importance for receptor binding. It was shown that the N-oxides of the neuroleptic agents clotiapine, loxapine, and clozapine were inactive in in vitro binding tests involving central dopaminergic receptors, and it is very likely therefore that the in vitro activity of these N-oxides in the rat is due to their enzymatic reduction to the active parent compounds. All derivatives having a basic side chain other than N-alkylpiperazinyl were inactive neuroleptically with the exception of a N-methyl-4-piperidyl derivative which showed relatively weak effects. 38 references. (Author abstract)

002999 Cantoni, Giulio L.; Chiang, Peter K. Laboratory of General and Comparative Biochemistry, NIMH, Bethesda, MD 20205 **The role of S-Adenosylhomocysteine and S-Adenosylhomocysteine hydrolase in the control of biological methylations. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 14 p.

An overview of the role of S-Adenosylhomocysteine (AdoHcy) and AdoHcy hydrolase in the control of biological methylations is presented. The versatility of AdoHcy, the reaction catalyzed by AdoHcy hydrolase, the production of homocyzteine and of cysteine in vertebrated by the hydrolysis of AdoHcy, and the discovery that an inborn error of metabolism (adenosine deaminase deficiency) is associated with severe innuno-deficiency involving both Blymphocytes and T-lymphocytes are discussed. The effect of changes in the intracellular S-Adenosylemethionine (AdoMet) AdoHcy ratio to the relative activity of a number of transmethylases is examined. Experimental data are reviewed which suggest that, as a general working hypothesis, the efficacy of 3-deazaadenosine (3-DZA) and other AdoHcy hydrolase ingibitors and/or AdoHcy analogs as antiviral agents relates to their ability to modulate or ingibit the reactions that lead to the synthesis of a fully methylated r'-cap structure in viral ribonucleic acid (RNA). 52 references.

003000 Klee, Werner A. Laboratory of General and Comparative Biochemistry, NIMH, Bethesda, MD 20205 **Peptides of the central nervous system, (Unpublished paper).** Bethesda, MD, NIMH, 1979. 100 p.

An overview of the peptides of the central nervous system (CNS) is presented which includes: identification of neuropeptides, biological activity of neuropeptides, the role of peptidases in neuropeptide control, and the blood brain barrier. The individual neuropeptides (substance-P, neurotensin, thyrotropin releasing hormone (TRH), somatostatin, luteinizing hormone releasing hormone (LHRH) (gonadoliberin), the opioid peptides endorphins and enkephalin, carnosine, oxytocin, and vasopressin) are discussed in detail. The neuropeptides are shown to be involved in the control of many nervous system functions. They are believed to act as mediators or inhibitors of at least some aspects of such basic brain functions as pain, pleasure, sleep, eating, sex, and drinking as well as in the autonomic control of body temperature, blood pressure, breathing, and gastro-intestinal functions. There is less evidence for a role of neuropeptides in the higher brain functions such as thinking. There is little evidence to support the view that each measurable behavior is associated with a specific peptide. It is clear that individual peptides function in the control of a number of different behaviors and that interactions and overlaps exist among them as well. 284 references.

003001 Knight, Martha; Klee, Werner A. Laboratory of General and Comparative Biochemistry, NIMH, Bethesda, MD 20205 **Purification of the enkephalin generating endopeptidase of rat brain membranes. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 6 p.

A radiochemical assay for the study of brain proteases, which is based on the availability of amphiphilic substrates, and the assay procedures for the case of the enkephalin generating endopeptidase substrate are described. The purified endopetidase was highly active in generating enkephalin form beta-Lipotropin (61-69) as well as from gamma-endorphin but much less so from beta-endorphin. 4 references.

003002 Kumakura, K.; Guidotti, A.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Primary cultures of chromaffin cells: molecular mechanisms for the induction of tyrosine hydroxylase mediated by 8-Br-cyclic AMP. (Unpublished paper).** Washington, DC, NIMH, 1979, 36 p.

Evidence is presented that the induction of tyrosine hydroxylase (TH) elicited by 8-Br-cyclic adenosine 3',5'-monophosphate (8-Br cAMP) in primary culture of bovine adrenal chromaffin cells can represent an adequate model to study whether the movements of activated catalytic subunits of cAMP-dependent protein kinase (cAPK) into various cell compartments and the phosphorylation of nuclear proteins can regulate the increase in nuclear ribonucleic acid (RNA) transcription of specific proteins. Data are presented which show that in the isolated chromaffin cells not only is the TH induction preceded by an activation of cytosol cAPK and by an increase in nuclear protein phosphorylation, but both the induction of TH and the increase of nuclear phosphorylation require an operative assembly of microtubular protein. The data suggest that the assembly of microtubular protein might be operative in the intracellular translocation and nuclear uptake of catalytic subunits of cAPK. In addition, the data support the view that an increase in nuclear protein phosphorylation is an essential step in the mediation of the acceleration of TH and mRNA synthesis elicited by 8-Br cAMP. 39 references.

003003 Lapszewicz, Jacek; Lange, Jerzy; Rump, Slawomir; Walczyna, Karol. Institute of Organic Chemistry and Technology, Warsaw Technical University, 00-662, Warsaw, Poland **Quantitative structure-activity relationship in anticonvulsants. I. QSAR analysis of new phenylsuccinimide derivatives.** European Journal of Medicinal Chemistry. 13(5):465-468, 1978.

Quantitative structure/activity relationships in phenylsuccinimide derivative anticonvulsants were investigated. Regression analysis showed a positive quantitative correlation between the anticonvulsive activity of 17 phenylsuccinimide derivatives against maximal electroshock seizures in mice and contribution of the substitent in the aromatic fragment of the total lipophilicity of the compound. Duration of the anticonvulsive effect depended on the substituent at the imidic nitrogen atom, increasing with its hydrophilicity. Electronic and steric factors were of minor importance. 13 references. (Author abstract modified)

003004 Maxson, Stephen C. University of Connecticut, Storrs, CT 06268 **Chemically-induced behavioral mutants in inbred mice.** Behavior Genetics. 8(6):555, 1978.

A summary of a paper read at the Eighth Annual Meeting of the Behavior Genetics Association, held at the University of California at Davis, June 1978, is presented. Chemically-induced behavioral mutants were investigated in inbred mice. Male C57BL/6Crl mice were treated for up to 8 weeks with one of the following nutagens: N-nitrosodiethylamine, N-nitroso-N-methylurethane, 3-methycholanthrene, N-methyldichlorethylamine, ethylmethanesulfonate, streptozotocin, 4-(O-tolylazo)-0-toluidine, or 4-aminobiphenyl. They were then bred to untreated females. The backcross descendants were tested on behavioral tasks. The mean age of the mice at the beginning of each test series was between 100 and 170 days. For the group descended from males treated with a known mutagen, there were significant mean differences between control and experimental populations on at least one behavioral measure. These mean differences may be interpreted as being due to chemically-induced mutation in the experimental population. (Journal abstract modified)

003005 Russell, James T.; Brownstein, Michael J.; Gainer, Harold. Laboratory of Developmental Neurobiology, NICHHD, Bethesda, MD 20205 **Liberation by trypsin of an arginine vasopressin-like peptide and neurophysin from a Mr 20,000 putative common precursor. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 29 p.

Results of experiemtns which provide the first direct evidence in support of the common precursor hypothesis (that vasopressin and its associated neurophysin are synthesized together in one monomolecular common precursor) are presented. A 35s-cysteine labelled putative precursor for vasopressin related neurophysin was isolated from the supraoptic nuclei of rats. This precursor was subjected to limited proteolysis with trypsin which produced a Mr 10,000 protein and peptide products. The former was identified as neurophysin on the basis of its pH dependent affinity for vasopressin and its behavior in isoelectric focusing systems. The tryptic peptides proved to be vasopressin-like since they: 1) were rich in cysteine: 2) comigrated with vasopressin on gel filtration columns in 6M Gu hydrochloric acid; 3) bound to a neurophysin-sepharose affinity column at pH 5.7; and 4) were recognized by antibodies against vasopressin. These data on the Mr 20,000 isoelectric point (pI) 6.1protein represent the first direct experimental evidence for a candidate for the common precursor of vasopressin and neurophysin. It is proposed that this common precursor be called propressophysin. 17 references. (Author abstract modified)

003006 Vasco, Michael R.; Domino, Edward F. Department of Neurology, V.A. Hospital, 4500 S. Lancaster Rd., Dallas, TX 75216 **Tolerance development to the biphasic effects of morphine on locomotor activity and brain acetylcholine in the rat.** Journal of Pharmacology and Experimental Therapeutics. 207(3):838-858, 1978.

The development of tolerance to the depressant and stimulant actions of morphine on locomotor activity and brain acetylcholine (ACh) was investigated in male albino rats. When administered subcutaneously to nontolerant rats, 1.0mg/kg morphine produced an increase in locomotor activity and a concomitant incrase in ACh utilization. Larger doses producedd biphasic effects on locomotor activity; a dose of only 10mg/kg resulted in an initial decrease and subsequent increase in ACh utilization in whole brain. The depressant and stimulant actions of morphine were antagonized by 1.0mg/kg i.p. naloxone. T"lerance to morphine was produced by injections of increasing doses of 8 hour intervals. Rapid tolerance developed to the locomotor depressant actions of morphine and to the decrease in brain Ach utilization. Tolerance to the depressant effects resulted in enhanced stimulant action. Tolerance also developed to the stimulant effects of morphine when large doses of the drug were administered daily. Biphasic effcts of 10mg/kg morphine were also seen in the hippocampus, thalamus, and hypothalamus; only a decrease in ACh was observed in the caudate nucleus. Tolerance developed to the descreases and increases in ACh utilization in these discrete brain regions. 33 references. (Author abstract modified)

003007 Yang, H.-Y. T.; Hong, J. S.; Fratta, W.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Endorphins. (Unpublished paper).** Washington, DC, NIMH, 1979, 18 p.

The naturally ocurring peptides (met5-enkephalin, leu5-enkephalin, and beta-endorphin) collectively known as endorphins are discussed. The endorphins share a common feature in their structure, that is, they all contain Tyr-Gly-Gly-Phe at their N-terminus which is an essential part of the molecule for the biological activity. Enkephalins and beta-endorphin are contained in separate regions in central as well as in peripheral systems suggesting that they represent two independent endogenous opioid-like agents. Enkephalins are stored in neurons throughout the brain structure and recently their existence in peripheral nervous system has also been documented. The distribution of beta-endorphin is more limited. Neuronal localization and other lines of evidence suggested that endorphins may participate in neuronal transmission. The behavior effects of endorphins imply that

endorphins may be a new area to explore in the studies of psychiatric disorders. 22 references. (Author abstract modified)

003008 Yang, H.-Y. T.; Hong, J. S.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **The search for proenkephalins: experimental tools and status of art. (Unpublished paper).** Washington, DC, NIMH, 1979. 10 p.

A general procedure for detection of high molecular weight met5-enkephalin-like polypeptides which are neither beta-lipotropin nor beta-endorphin and may function as proenkephalins is discussed. The existence of multiple forms of enkephalin-like peptides is demonstrated in bovine adrenal glands and striatum. The high molecular weight met5-enkephalin-like materials, which contain the sequence of Tyr-Gly-Gly-Phe-Met within their structures, are not beta-endorphin or beta-lipotropin-like materials. The trypsinization experiments suggest that the high molecular weight forms found in adrenal and striatum may function as precursors for the met5-enkephalin biosynthesis. The existence of multiple forms of immunoreactive enkephalin-like materials, especially in the adrenal gland, suggest that the interpretation of the results of radioimmunoassays carried out with crude tissue extracts must be exercised with caution. 17 references.

02 DRUG DEVELOPMENT (PRECLINICAL SCREENING)

003009 Attwood, D.; Agarwal, S. P. Pharmacy Department, University of Manchester, Manchester, M13 9PL, England **The surface activity and self-association of some beta-adrenoceptor blocking agents in aqueous solution.** Journal of Pharmacy and Pharmacology (London). 31(6):392-395, 1979.

The surface activity at the air-solution interface of a series of beta-adrenoceptor blocking agents was determined. The drugs investigated included, propranolol, sotalol, oxprenolol, labetolol, timolol, metoprolol and acebutolol. Correlation between surface activity and local anaesthetic potency of the drugs was examined. Light scattering measurements have indicated self-association of sotalol, oxprenolol, acebutolol and metoprotol in 0.5mol kg-1 sodium chloride. Critical micelle concentrations and aggregation numbers are reported. 18 references. (Author abstract)

003010 Coutts, R. T.; Baker, G. B.; Benderly, A.; McKim, H. R. Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta, Edmonton, Alberta, Canada T6G 2N8 **Side-chain monofluorinated analogs of amphetamine and p-chloroamphetamine. Effects on release of dopamine and 5-hydroxytryptamine from rat striatum.** Research Communications in Chemical Pathology and Pharmacology. 24(1):201-204, 1979.

The effects of monofluorinated analogs of racemic amphetamine and p-chloroamphetamine on the release of tritiated dopamine and serotonin from slices of corpus striatum prepared from rat brain were examined. Replacement of the methyl group with a monofluoromethyl group gave products with reduced basicity. The monofluorinated analogs retained some ability to stimulate release of dopamine and serotonin, but were significantly less potent than their parent compounds. 9 references. (Author abstract modified)

003011 Cross, Peter E.; Gadsby, Brian; Holland, Gerald F.; McLamore, William M. Pfizer Central Research, Pfizer Ltd., Sandwich, Kent, England **Cerebrovasodilatation through selective inhibition of the enzyme carbonic anhydrase. 1. Substituted benzenedisulfonamides.** Journal of Medicinal Chemistry. 21(9):845-850, 1978.

The chemistry and pharmacology of a series of substituted benzenedisulfoamide carbonic anhydrase inhibition is described. One compound, 4-(4-methoxypiperidinisulfonyl)-2-chlorobenzenesulfonamide, showed anticonvulsant activity animals at doses that produced only minimal diuretic effects. This compound selectively increased cerebral blood flow in animals and in humans, without producing an unacceptable level of metabolic acidosis. 38 references. (Author abstract modified)

003012 Frey, H.-H.; Dengjel, Ch. Laboratory of Pharmacology and Toxicology, School of Veterinary Medicine, Free University, Berlin, Germany **Anticonvulsant action in a series of benzimidazole amthelmintics.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(2):251-254, 1979.

In doses of 100mg/kg i.p.,parbendazole, fenbendazole, mebendazole, thiabendazole, flubendazole, albendazole, or cambendazole elevated the electroconvulsant threshold in NMRI mice. This effect was most pronounced with cambendazole, which also had the longest duration of action. None of these benzimidazole anthelmintic drugs elevated the pentetrazole seizure threshold. 11 references. (Author abstract modified)

003013 Gacel, Gilles; Fournie-Zaluski, Marie-Claude; Fellion, Etienne; Roques, Bernard P.; Senault, Bernard U. E. R. des Sciences Pharmaceutiques, 4 avenue de l'Observatoire, 75006 Paris, France **Conformation and biological activities of hexapeptides related to enkephalins: respective roles of the ammonium and hydroxyl groups of tyrosine.** Life Sciences (Oxford). 24(8):725-731, 1979.

To explore the role of the additional arginine (Arg) or tyrosine (Tyr) residue in the activity of Arg-methionine-enkephalin and Tyr-methionine-enkephalin, a series of analogs were prepared and analyzed for activity in inhibiting tritiated leucine-enkephalin binding to mouse striatum and in contracting the guinea-pig ileum and mouse vas deferens. Results indicate that the presence of an ammonium group on the CHalpha of the N-terminal amino acid is absolutely required for activity, whereas its position relative to the backbone can be modified somewhat. The presence of an hydroxyl group on Tyr1 of enkephalin is also an absolute requirement. Nuclear magnetic resonance spectroscopy studies indicated that the characteristic conformation of the enkephalin backbone was retained in the analogs, indicating that the observed changes in activity were not related to modified conformation of this part of the molecule. A model for the interaction of enkephalins with their receptors, involving electrostatic and Van der Wal Waals forces, is proposed. 30 references. (Author abstract modified)

003014 Gall, Martin; Lahti, R. A.; Rudzik, A. D.; Duchamp, D. J.; Chidester, C.; Scahill, T. CNS Diseases Research, Upjohn Company, Kalamazoo, MI 49001 **Novel anxiolytic agents derived from alpha-amino-alpha-phenyl-o-tolyl-4H-triazoles and -imidazoles.** Journal of Medicinal Chemistry. 21(6):542-548, 1978.

Several new alpha-amino-phenyl-o-tolyltriazoles and -imidazoles were prepared in one step by means of a novel reductive rearrangement of the corresponding benzodiazepines with hydrazine hydrate. These new traizoles were found to have moderate sedative and muscle relaxing activity in mice (i.e.,these compounds depressed the traction and dish reflexes at higher doses than did diazepam), but were very potent antagonists of the clonic convulsions induced in mice by the administration of pentylenetetrazole. Furthermore, they antagonized the lethality induced by thiosemicarbazide. While these new compounds were very active in mice, most were inactive in rats. These results are discussed with reference to the metabolism of compound 13. 14 references. (Author abstract)

003015 Kukla, Michael J.; Bloss, James L.; Brougham, Linda R. Department of Chemistry, G. D. Searle and Company, Chicago, IL 60680 **Use of butaclamol template in a search for antip-**

sychotic agents with lessened side effects. Journal of Medicinal Chemistry. 22(4):401-406, 1979.

Progress in the search for antipsychotic agents which avoid the parkinsonian and tardive dyskinesia side-effects is reported. A number of molecular similarities between the antipsychotic agents butaclamol and clozapine were noted. Based on the premise that this was a strong indicator of a common mechanism of action (such as binding at the agonist state of the dopamine receptor), a research approach was designed. Three simplified analogues of butaclamol which still retained the molecular functionalities of the parent structure were synthesised and tested in the haloperidol receptor assay. 1-(5-Methyl-10, 11-dihydro-5H-dibenzo(a,d)cycloheptene)-4-tert- butyl-4-piperidine(12a) displaced tritiated haloperidol with an IC50 value of 2.4nM, as compared to a value of .5nM for butaclamol. However, when 12a was tested in vivo or in the spiroperidol receptor assay, it was found to be considerably less potent. 20 references. (Author abstract modified)

003016 Lotti, V. J.; Clineschmidt, B. V.; Haubrich, D.; Porter, C. C. Merck Sharp Dohme Research Laboratories, West Point, PA 19486 **6-Chloro-2-(1-piperazinyl) quinoxaline (CPQ): action on serotonin-induced behavioral responses and interactions with chloromethamphetamine and dimethyl-meta-tyramine.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 235(1):103-115, 1978.

The potency of the chemically novel agent 6-chloro-2-(1-piperazinyl) quinoxaline (CPQ) in inhibiting neuronal reuptake of serotonin, dopamine, and norepinephrine was examined. CPQ was 25-50 times more potent thn chlorimipramine in potentiating the head twitch response to 5-hydroxytryptophan (5-HTP) and in antagonizing p-chloromethamphetamine (PCMA) induced depletion of brain serotonin in female Sprague-Dawley rats. CPQ also potentiated the forepaw clonus produced by 5-HTP in rats and antagonized PCMA-induced head twitches. In doses 30 times higher than those necessary to significantly affect serotonergic systems, CPQ failed to antagonize either tetrabenazine-induced sedation in female CF1 mice or the depletion of rat brain and heart norepinephrine and brain dopamine by 4,alpha-dimethyl-meta-tyramine. Results indicate that CPQ is a potent and higher selective inhibitor of neuronal reuptake of serotonin. 19 references. (Author abstract modified)

003017 Nichols, David E.; Woodard, Ronald; Hathaway, Bruce A.; Lowy, Martin T.; Yim, George K. W. Dept. of Medicinal Chemistry and Pharmacognosy, School of Pharmacy and Pharmacal Sciences, Purdue University, West Lafayette, IN 47907 **Resolution and absolute configuration of trans 2-(2,5-dimethoxy-4-methylphenyl) cyclopropylamine, a potent hallucinogen analogue.** Journal of Medicinal Chemistry. 22(4):458-460, 1979.

The synthesis, resolution, and determination of absolute configuration, which are essential to the further development of a new model which interrelates the structures of phenethylamine hallucinogens, LSD, and serotonin, is described. The hallucinogen analogue, trans-2-(2,5-dimethoxy-5-methylphenyl)cyclopropylamine (DMCPA), was resolved into its two enantiomers by fractional crystallization of salts with d- or l-O,O-dibenzoyltartaric acid. A comparison of the ORD and CD curves of the N-5-bromosalicylidene derivatives of trans-2-phenylcyclopropyl-amine of known absolute configuration and of the title compound established the stereochemistry of the latter to be (1R,2S)-(-) and (1S,2R)-(). It was previously shown that the (-) isomer shows selective behavioral effects in cats and mice. The (-) isomer was also shown to selectively elicit rabbit hyperthermia when compared to the () isomer. In view of the stereoselective ability of the (-) isomer to elicit hallucinogen-like behavioral profiles in these animal models, the proof of absolute configuration lends further support to a new model which interrelates the active binding conformation of phenethylamine hallucinogens to that of serotonin and tryptamines. 23 references. (Author abstract modified)

003018 Niemegeers, C. J. E.; Laduron, P. M.; Janssen, P. A. J. Janssen Pharmaceutica n.v., Turnhoutsebaan 30, B-2340 Beerse, Belgium **Pharmacology and biochemistry of bromperidol.** Acta Psychiatrica Belgica (Bruxelles). 78(1):37-50, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, the pharmacology and biochemistry of bromperidol is reviewed. Bromperidol 4-(4-(4-bromophenyl)-4-hydroxy-1-piperidinyl)-1-(4-fluophenyl)-1-butan ne is a new member of the butyrophenone series, of which haloperidol is the prototype. Bromperidol increased homovanillic acid levels and was found to have a high affinity for neuroleptic receptors in rats. In both rats and dogs, bromperidol, administered both subcutaneously and orally, was found to be at least as effective as haloperidol. Based on animal data, one would expect bromperidol to be a successful drug for oral maintenance treatment of psychotic patients who respond to neuroleptic therapy in general. A single oral dose of about 4mg/kg ought to be effective and well tolerated. While typical neuroleptic side-effects may occur at high doses, oversedation and autonomic side-effects will be negligible. A brief discussion follows the main text. 18 references. (Author abstract modified)

003019 Pandey, B. R.; Gupta, A. K.; Raman, K.; Parmar, S. S. Parmar: Department of Physiology, School of Medicine, University of North Dakota, Grand Forks, ND 58202 **Anticonvulsant, analgesic and monoamine oxidase inhibitory properties of newer 4-hydroxy-4-phenylpiperidinocarbamides.** Research Communications in Chemical Pathology and Pharmacology. 23(2):349-358, 1979.

Fourteen 1-(N-acetyl(4-hydroxy-4-phenyl-piperidino))-3-aryl carbamides were synthesized, characterized and evaluated for their anticonvulsant, analgesic, and monoamine oxidase (MAO) inhibitory properties. All carbamides (100mg/kg ip) provided 20-60% protection against pentylenetetrazol-induced seizures in mice. All but two of the compounds possessed analgesic activity, providing 17-67% protection against the tail pinch response in mice. All carbamides (1mM) inhibited (5-90%) the in vitro activity of rat brain MAO. The low toxicity of these compounds was reflected in their high median lethal dose values, which ranged from 500mg/kg to greater than 1000mg/kg. 11 references. (Author abstract modified)

003020 Ramacci, M. T.; Ghirardi, O.; Maccari, F.; Pacifici, L.; Sale, P. Dept. of Biology Sigma-Tau S.p.A., Research Laboratories, Pomezia, Rome, Italy **Pharmalogical evaluation of delta2,1,2,4-triazolin-5-one (1,3(4-m-chlorophenyl 1 piperszinyl) propyl) 3,4-diethyl hydrochloride (etoperidone), a new potential antidepressant drug.** Arzneimittel-Forschung (Aulendorf). 29(2):294-307, 1979.

The pharmacological properties of delta2,1,2,4-triazolin-5-one (1,3(4-m-chlorophenyl-1-piprazinyl)-propyl)-3,4-diethyl-hydrochloride (etoperidone), a new potential antidepressant, were investigated and compared with those of other psychoactive drugs in laboratory animals. Eperidone resulted in reduction of reactivity, emotional and exploratory behavior, and locomotor activity, but did not affect motor coordination, nor produce catatonia and ptosis. It also markedly reduced aggression, and conditioned reflexes (CR), facilitated CR acquisition, influenced body temperature, and showed thirst quenching and analgesic activity. Neuropharmacological interactions are delineated in regard to apomorphine syndrome, reserpine and prochlorperazine effects, 5-hydroxytryptophan-induced syndrome, oxotre-

morine tremors and hyperthermia, L-dihydroxyphenylalanine (L-dopa)-nialamide syndrome, amphetamine-induced hypermotility, and hexobarbital narcosis. Etoperidone showed a hypotensive and alpha-adrenolytic activity, and exhibited very weak in vitro anticholinergic and antihistaminergic properties. It is concluded that etoperidone is a potent and selective potentiator of 5-hydroxytryptamine which may be of use in elevating mood of depressed patients. 47 references. (Author abstract modified)

003021 Rump, S.; Ilczuk, I.; Walczyna, K. Wojskowy Instytut Higieny i Epidemiologii, Kozielska 4, PL-01-163, Warszawa, Poland **Anticonvulsant properties of some new derivatives of phensuccinimide.** Arzneimittel-Forschung (Aulendorf). 29(2):290-292, 1978.

Anticonvulsant properties of two new derivaties of phenylsuccinimide, N-morpholinomethyl-3-bromophenylsuccinimide (IL-7) and N-ammino-3-bromophenylsuccinimide (IL-16), were studied in female mice. It has been found that both compounds have similar acute toxicity and are longer acting than phensuximide. They were especially active in maximal electroshock seizure tests. Their effectiveness against convulsions produced by pentetrazole was less than that of phensuzimide. Their effectiveness against procaine and strychnine was similar; only one of the tested compounds, IL-16 had a very high potency against strychnine. IL-16 also was found to have a different effect/time pattern, which is probably attributable to its different pharmacokinetic behavior. 8 references. (Author abstract modified)

003022 Rusterholz, David B.; Long, J. P.; Flynn, J. R.; Cannon, J. G.; Lee, T.; Pease, J. P.; Clemens, J. A.; Wong, D. T.; Bymaster, F. P. Department of Pharmacology, College of Medicine, University of Iowa, Iowa City, IA 52242 **Dopaminergic effects of non-hydroxylated rigid analogs of apomorphine.** European Journal of Pharmacology (Amsterdam). 55(1):73-82, 1979.

A series of rigid analogs of apomorphine lacking aromatic hydroxylated substituents was evaluated for dopaminergic properties. Three compounds (N-methyl-N-propyl-2-aminotetralin, N,N-dipropyl-2-aminotetraline, and N,N-dipropyl-2-aminoindane) induced emesis in mongrel dogs, induced contralateral turning in male Sprague-Dawley rats with unilateral lesions of the dopaminergic nigrostriatal pathway, and inhibited prolactin secretion in intact rats. The circling responses induced by these compounds were attenuated by pretreatment with alpha-methyl-p-tyrosine methyl ester. The compounds were weak inhibitors of tritiated dopamine binding in calf caudate homogenates. The possibility that these agents may be metabolically deactivated in vivo is discussed. 45 references. (Author abstract modified)

003023 Smellie, F. W.; Davis, C. W.; Daly, J. W.; Wells, J. N. Laboratory of Bioorganic Chemistry, NIAMDD, NIH, Bethesda, MD 20205 **Alkylxanthines: inhibition of adenosine-elicited accumulation of cyclic AMP in brain slices and of brain phosphodiesterase activity.** Life Sciences (Oxford). 24(26):2475-2481, 1979.

A series of 1,3-dialkylxanthines was tested for potency as antagonists of adenosine induced accumulation of cyclic adenosine monophosphate accumulation in guinea-pig cortical slices and as inhibitors of brain phosphodiesterases. The descending order of potency as adenosine antagonists was: 8-phenyltheophyolline, 1,3-dibutylxanthine, 1,3-dipropylxanthine, theophylline, 3-isobutyl-1-methylxanthine (IBMX), 1,3,7-triethylxanthine, 7-benzyl-IBMX, 8-methol-IBMX, 7-benzyl-8-bromo-IBMX, 9-methyl-IBMX, 8-bromo-IBMX, 1-isoamyl-3-isobutylxanthine. The descending order of potency as inhibitors of brain calcium dependent phosphodiesterase was: 7-benzyl-IBMX, 7-benzyl-8-bromo-IBMX, 8-methyl-IBMX, IBMX, 8-bromo-IBMX, 9-methyl-IBMX, 1,3,7-triethylxanthine, 1,3-dibutylxanthine, isoamyl-3-isobutylxanthine, theophylline. Both 8-phenyltheophylline and 1,3-dibutylxanthine were potent adenosine antagonists with relatively low activity as calcium dependent phosphodiesterase inhibitors, whereas 7-benzyl-IBMX and 7-benzyl-8-bromo-IBMX showed the opposite pattern. None of the compounds were potent inhibitors of brain calcium independent phosphodiesterase. However, 1-isoamyl-3-isobutylxanthine may prove useful as an inhibitor of this enzyme, due to its very low activity as an adenosine antagonist. 17 references. (Author abstract modified)

03 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

003024 Abood, L. G.; Lowy, K.; Tometsko, A.; MacNeil, M. Center for Brain Research, University of Rochester Medical Center, Rochester, NY 14642 **Evidence for a noncholinergic site for nicotine's action in brain: psychopharmacological, electrophysiological and receptor binding studies.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(2):213-229, 1979.

The psychopharmacological, electrophysiological, and behavioral effects of nicotine and newly synthesized derivatives of nicotine and piperadine were examined in male Sprague-Dawley rats. Intraventricular injection of l-lOmcg of (-)-nicotine produced a characteristic prostration immobilization syndrome, which was accompanied by seizures and tremors at higher doses. The ()-isomer of nicotine possesed 0.01 the activity of the natural (-)-isomer. The syndrome could be prevented by intraventricular pretreatment with N-benzyl and N-p-nitrophenylazido derivatives of nicotine or piperidine. A variety of neurotransmitters and psychotropic agents, including acetylcholine and anticholinergic drugs, were without antagonistic action. Recordings of spontaneous electrical activity from electrodes chronically implanted into the region of the dorsal hippocampus showed a marked decrease in the amplitude and number of 6-8 second discharges after nicotine, and this change was correlated with the behavioral syndrome. Receptor binding studies with labeled nicotine, bungarotoxin, and tubocurarine were also performed; only nicotine showed a competitive effect with the nicotine and piperidine antagonists. Results demonstrate the existence of a specific, noncholinergic binding site for nicotine in rat brain. 25 references. (Author abstract modified)

003025 Ader, J.-P.; Korf, J. Dept. of Biological Psychiatry, Psychiatric University Clinic, Oostersingel 59, 9713 EZ Groningen, The Netherlands **Free 3-methoxy-4-hydroxyphenylethyleneglycol in the central nervous system of the rat: semi-automated fluorometric assay, turnover and effects of drugs.** Journal of Neurochemistry (Oxford). 32(6):1761-1768, 1979.

The effects of drugs on the content of free 3-methoxy-4-hydroxyphenylethyleneglycol (MOPEG) in the brain and spinal cord of Wistar rats were determined, using a new semiautomated fluorometric assay. Treatment with clozapine, haloperidol, reserpine, or phenoxybenzamine increased the content of MOPEG in brain and spinal cord. Cerebral levels of MOPEG decreased after injection of desipramine or after chronic destruction of the locus coeruleus electrolytic or chemical lesions. Animals killed by microwave irradiation did not show lower MOPEG contents in brain than decapitated animals. These results indicate that MOPEG is a measure for changes in central noradrenaline turnover and that drugs affect MOPEG in brain and spinal cord similarly. 47 references. (Author abstract modified)

003026 Advis, J. P.; Simpkins, J. W.; Bennett, J.; Meites, J. Department of Physiology, Southwestern Medical School, Univer-

sity of Texas, Dallas, TX 75219 **Serotonergic control of prolactin release in male rats.** Life Sciences (Oxford). 24(4):359-365, 1979.

To clarify the relationship between the central serotonergic system and the control of prolactin secretion, the effects of dorsal raphe lesions, electrical stimulation of the midbrain raphe nucleus, and treatment with parachlorophenylalanine (PCPA) on prolactin section were studied in male Sprague-Dawley rats. PCPA treatment or radiofrequency destruction of serotonergic cell bodies in the midbrain raphe nucleus decreased forebrain serotonin (5HT) and 5-hydroxyindoleacetic acid concentrations, as well as prolactin secretion. Electrical stimulation of the raphe increased forebrain 5HT turnover and prolactin secretion. Results indicate that 5HT neurons in the raphe nuclei may be involved in regulating prolactin secretion in male rats. 22 references. (Author abstract modified)

003027 Ahn, Ho Sam; Gardner, Eliot; Makman, Maynard H. Dept. of Biochemistry, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461 **Anterior pituitary adenylate cyclase: stimulation by dopamine and other monoamines.** European Journal of Pharmacology (Amsterdam). 53(3):313-317, 1979.

Adenylate cyclase activity of homogenates of anterior pituitary from rat, rabbit, and monkey was stimulated by dopamine, other amine neurotransmitters, and Gpp(NH)p. The concentration of dopamine for half-maximal stimulation of activity was 2-5mcM. Studies with selective agonists and antagonists indicate the presence of dopamine receptors and beta-adrenergic receptors coupled to adenylate cyclase in anterior pituitary. In addition, histamine stimulated activity in rabbit and monkey, but not in rat, anterior pituitary. 12 references. (Author abstract)

003028 Aiello-Malmberg, Petra; Bartolini, A.; Bartolini, Rosalia; Galli, A. Dept. of Pharmacology, University of Florence, I-50134 Florence, Italy **Effects of morphine, physostigmine and raphe nuclei stimulation on 5-hydroxytryptamine release from the cerebral cortex of the cat.** British Journal of Pharmacology (London). 65(4):547-555, 1979.

The release of 5-hydroxytryptamine (5-HT) from the cerebral cortex and caudate nucleus of brainstem transected cats and from the cerebral cortex of male Wistar rats anesthetized with urethane was determined by radioenzymatic and biological assay. The stimulation of nucleus linearis intermedius of raphe doubled the basal 5-HT release in the caudate nucleus and tripled 5-HT release in the cerebral cortex. The effects of electrical stimulation of the raphe were potentated by chlorimipramine. Brain 5-HT release was greatly increased by morphine hydrocholoride (6mg/kg i.v.)and by physostigmine (100mcg/kg i.v.), but not by DL-DOPA (50mg/kg i.v.). It is suggested that the 5-HT releasing action of physostigmine is unrelated to its anticholinesterase activity. 42 references. (Author abstract modified)

003029 Akera, Tai; Gubitz, Richard H.; Brody, Theordore M.; Tobin, Thomas. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI 48824 **Effects of monovalent cations on (NA K)-ATPase in rat brain slices.** European Journal of Pharmacology (AMsterdam). 55(3):281-292, 1979.

The influence of monovalent cations on membrane sodium/potassium dependent adenosine triphosphatase (NA/K-ATPase) was estimated in male Sprague-Dawley rat brain cortical slices. High concentrations of potassium (K), rubidium (Rb), or cesium (Cs) ions stimulated respiration in the presence of monovalent cations that also stimulated Ns/K-ATPase. Low concentrations of Rb and Cs, however, failed to affect oxygen consumption. Lithium ions (Li) slightly and transiently stimulated oxygen uptake at low concentrations and inhibited it at higher concentrations. Low concentrations of thallium ion (T1) stimulated respiration in a K free medium, but the inhibitory effects of T1 were predominant at higher concentrations or in the presence of K. Although Rb and Li produced opposite effects on this enzyme system under certain conditions, these actions do not appear to be related to the antidepressant action of Rb or the antimanic action of Li. 42 references. (Author abstract modified)

003030 Allen, R. Michael; Flemenbaum, Abraham. Dept. of Psychiatry, Louisiana Medical Center, Shreveport, LA **The effect of amantadine HCl on haloperidol-induced striatal dopamine neuron hypersensitivity.** Biological Psychiatry. 14(3):541-544, 1979.

Thirty Sprague-Dawley rats were divided into three groups of 10 animals each (5 male, 5 female) and tested with subthreshold apomorphine. There was no significant response to 0.125mg/kg apomorphine challenge, although a dose of 0.25mg/kg resulted in a differential response according to sex. From the male subgroup, amantadine prevented the development of haloperidol induced dopamine neuron hypersensitivity. It is suggested that possible explanations of this variability include the fact that males represent a more genetically homogeneous group than females, who are genetic mosaics. Other possible factors would include the effects of the estrous cycle and other hormonal systems in the female on central monoamine systems. 16 references.

003031 Arbuthnott, G. W. MRC Brain Metabolism Unit, University Department of Pharmacology, Edinburgh EH8 9JZ, Scotland **Studies on the interactions between the substantia nigra and the neostriatum.** Advances in Biochemical Psychopharmacology. 19:235-248, 1978.

In a study of the interactions between the substantia nigra (SN) and the neostriatum, the striatonigral pathway was mapped in rats, using the radioleucine tracing technique. Results indicate that the topographical distribution of the striatonigral pathway in the rat is similar to that in the cat and monkey. Small lesions were then made in the pathway, largely confined to the crus cerebri and small enough not to reduce the dopamine content in the ipsilateral striatum. These lesions caused a significant lowering of gamma-aminobutyric acid concentration and lowered the glutamic acid decarboxylase activity of the SN without altering the turnover of dopamine in the striatum. Alterations of dopamine receptor activity with haloperidol or apomorphine caused the same change in dopamine metabolite concentration in control and lesioned striata. 49 references.

003032 Bacopoulos, N. G.; Redmond, D. E.; Roth, R. H. Dept. of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Serotonin and dopamine metabolites in brain regions and cerebrospinal fluid of a primate species: effects of ketamine and fluphenazine.** Journal of Neurochemistry (Oxford). 32(4):1215-1218, 1979.

The effects of ketamine and fluphenazine on serotonin (5-HT) and dopamine (DA) metabolites in brain regions and cerebrospinal fluid (CSF) of a primate species (Cercopithecus aethiops) were investigated. The concentration of DA and 5-HT metabolites was not altered by doses of ketamine which induced dissociative anesthesia. Fluphenazine increased homovanillic acid (HVA) content in all brain regions examined. An increase in HVA and 5-hydroxyindoleacetic acid (5-HIAA) concentration was observed in cisternal CSF 4 hours after ketamine without a concomitant change in the brain concentrations of these metabolites. 23 references. (Author abstract modified)

003033 Baker, Harry F.; Ridley, Rosalind M. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow, HA1 3UJ, England **Increased HVA levels in primate ventricular CSF following amphetamine administration.** Brain Research (Amsterdam). 167(1):206-209, 1979.

Levels of the dopamine metabolite, homovanillic acid (HVA), were determined in the ventricular cerebrospinal fluid of cynomolgous monkeys after intramuscular injection of 8mg/kg d-amphetamine sulphate and 100 mg/kg probenecid or after injection of probenecid alone. After probenecid alone, HVA levels reached a maximum within 8 hours (230%) and declined thereafter. After treatment with probenecid and amphetamine, the HVA levels reached a maximum within 10 hours (412%) and then declined. The HVA concentrations were significantly increased by amphetamine between 4 and 10 hours after administration. 18 references.

003034 Balfour, D. J. K.; Reid, A. Department of Pharmacology and Therapeutics, University Medical School, Ninewells, Dundee, Scotland **Effects of betamethasone on the stimulation of corticosterone secretion in rats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(1):67-74, 1979.

The effects of betamethasone on the elevation of male Sprague-Dawley rat plasma corticosterone levels by nicotine (400mcg/kg), urethane anesthesia, or psychological stress were studied. Betamethasone pretreatment (5mg/kg given in drinking water over 24 hours) initially suppressed the response to all three stimuli but, after 24 hours, only the response to urethane remained totally suppressed. Nicotine administered at this time to urethane anesthetized rats caused an increase in plasma corticosterone, apparently by stimulation of the autonomic nervous system. Results suggest that, following betamethasone, there is a prolonged delay in the recovery of the specific mechanism through which urethane stimulates pituitary-adrenal function, rather than a total blockade of the effects of all stressful or chemical stimuli on adrenocorticotrophic hormone secretion. 10 references. (Author abstract modified)

003035 Barasi, Stephen. Department of Physiology, University College Cardiff, P.O. Box 78, Cardiff CF1 1XL, Wales **Responses of substantia nigra neurones to noxious stimulation.** Brain Research (Amsterdam). 171(1):121-130, 1979.

The responses of neurons in the substantia nigra to noxious radiant heat applied to the hind foot and to intraarterially administered bradykinin were examined in Wistar rats. Some nigral neurons responded to both types of noxious stimulation. Most nociceptive neurons were excited by noxious stimulation, but some exhibited a reduced firing rate. Following injection of bradykinin, responses to noxious heat were reduced in magnitude for up to an hour. These results indicate that some nigral neurons are nociceptive and suggest that dopamine is involved in nociceptive mechanisms. 28 references. (Author abstract modified)

003036 Bareggi, S. R.; Genovese, E.; Markey, K. Markey: Dept. of Psychiatry, School of Medicine, University of Connecticut, Farmington, CT 06032 **Short and long-term effects of reserpine on the concentration of 1-(4 hydroxy-3-methoxyphenyl) ethane-1,2-diol (MOPEG-S04) in the brain of the rat.** British Journal of Pharmacology (London). 65(4):573-578, 1979.

Reserpine (1.25mg/kg i.p.)induced an increase (172% of controls) in the concentration of 1-(4-hydroxy-3-methoxyphenyl)ethane-1,2-diol sulphate (MOPEG-S04) and a decrease in the noradrenaline (NA) concentration (50% of controls) in male rat brain 2 hours after injection. Higher doses of reserpine did not induce a larger increase in the concentration of MOPEG-S04. A second dose of reserpine given 24 hours after the first did not increase the MOPEG=S04 concentration, but amphetamine 5.0mg/kg i.p.)administration or electrical stimulation significantly increased the concentration of MOPEG-S04. The concentration of NA began to return to normal 24 hours after a single injection of reserpine, but that of MOPEG-S04 remained at about 70% of controls during a 5 days observation period. The rate of probenecid induced accumulation of MOPEG-S04 was significantly lower 3 and 4 days after reserpine and returned to control value on the fifth day; at this time, the concentration of NA had reached 50% of the control value. These findings indicate that MOPEG-S04 is not the major metaboite of NA during the initial phase of reserpine induced NA release. Reserpine apparently acts on the storage pool, while amphetamine acts on the functional pool. During the first phase of postdrug recovery, there is a clear decrease in NA output, which appears to be regulated by the concentration of NA in the storage pool. 25 references. (Author abstract modified)

003037 Bauer, Birgitta. Department of Ophthalmology, University of Lund, Lund, Sweden **Effect of pentobarbitone on the spontaneous efflux of gamma-amino acids from rabbit retina.** Brain Research (Amsterdam). 163(2):307-317, 1979.

The effect of pentobarbitone on the spontaneous release of radioactivity from rabbit retinas preloaded with tritiated (3H) gamma-aminobutyric acid (GABA), L-2,4-diaminobutyric acid (DABA), beta-alanine, and glycine was studied. A high concentration (0.001M) of pentobarbitone reduced the rate of spontaneous efflux of 3H-GABA, 3H-DABA, and 3H-beta-alanine, but not that of 3H-glycine. Glial release of 3H-GABA was much less influenced. At lower concentrations of pentobarbitone, there was an initial increase in the release of 3H-GABA, 3H-DABA, and 3H-beta-alanine followed by a decrease. Results indicate there are several components in the release system for the amino acids. 24 references. (Author abstract modified)

003038 Beart, P. M.; Bilal, Khalidah. Dept. of Medicine, University of Melbourne, Heidelberg, Victoria 3084, Australia **Allylglyine: intranigral effects and reappraisal of actions on the GABA system.** Biochemical Pharmacology (Oxford). 28(4):449-454, 1979.

The interaction of allyglycine (administered intraperitoneally, intraventricularly, and intranigrally) with the y-aminobutyric acid acid system was studied in a number of rat brain regions. The effects of allyglycine appeared to result from reduced availability of brain y-aminobutyric acid through inhibition of glutamate decarboxylase activity. Allylglycine was a more effective inhibitor of glutamate decarboxylase in vivo than in vitro, and could be metabolized to 2-keto-pent-4-enoic acid. Sublethal doses of intraventricular allyglycine had no effect on y-aminobutyric acid metabolism. Intranigral allyglycine initially produced contralateral circling behavior accompanied by elevated dopamine turnover in the ipisilateral striatum. Seizure activity was subsequently noted. Results indicate that observed actions of allylglycine stem from the combined actions of the parent amino acid and the keto acid metabolite. 39 references. (Author abstract)

003039 Beaumont, Ann; Hughes, John. Department of Biochemistry, Imperial College, South Kensington, London SW7 2AZ, England **Biology of opioid peptides.** Annual Review of Pharmacology and Toxicology. 19:245-267, 1979.

The biological role and the mechanism of action of opioid peptides are examined, emphasizing that these endogenous or synthetic compounds have a spectrum of pharmacological activity similar to that of morphine and other narcotic agonist drugs. Extraction and assay techniques are described, along with distribution of the peptides and their hypothalamic-pituitary mecha-

nisms. Receptor classification, behavior and other central effects, biogenesis and metabolism are also discussed, as well as evidence for enkephalin release and turnover. Research data suggest that opioid peptides create euphoria in experimental animals and in humans, and that the enkephalins are involved in a short-term, tonic inhibition of neurotransmitter processes. B-endorphin may be released under more extreme circumstances of stress or injury and may act for prolonged periods. Short-term analygesic effects may be attributed to the enkephalins while the histochemical, electrophysiological, and pharamacological evidence for enkephalinergic modulation in the spinal cord-substantia gelatinosa is impressive. It is suggested that considerable uncertainties, however, still exist as to the mode of action of these compounds. 190 references.

003040 Bechtel, W. D.; Mierau, J. Abt. Biochemie, C. H. Boehringer Sohn, D-6507 Ingelheim am Rhein, Germany **Alpha-noradrenergic receptor binding of clonidine analogues.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R59, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellshcaft, held in Mainz in March 1979, the specific alpha-noradrenergic binding of tritiated clonidine and its displacement by structurally related compounds in rat cerebral cortex homogenates is described. The concentration required for 50% displacement of specific (3H)clonidine was calculated for each drug and compared to its hypotensive effects in rabbits. The affinities to the alpha-noradrenergic receptors of all the compounds tested in vitro correlated well with the drugs' pharmacological activities in vivo. High activity in vitro was associated with low pharmacological efficacy, possibly as a result of the compounds' inability to penetrate the blood/brain barrier. 2 references. (Author abstract modified)

003041 Belcher, Glyn. Dept. of Pharmacology, University of Cambridge, Hills Road, Cambridge, CB2 2QD, England **The effects of intra-arterial bradykinin, histamine, acetylcholine and prostaglandin El on nociceptive and non-nociceptive dorsal horn neurones of the cat.** European Journal of Pharmacology (Amsterdam). 56(4):385-395, 1979.

The effects of pheripherally administered bradykinin, 5-hydroxytryptamine (5-HT), histamine, acetylcholine (ACh), and prostaglandin E1 (PGE1) on the firing of nociceptive and non-nociceptive dorsal horn neurons in the cat were examined. A small amount of bradykinin caused activation of nociceptive cells and slowly conducting nerve fibers. Larger amounts of bradykinin and large amounts of histamine, 5-HT, and ACh activated both nociceptive and nonnociceptive neurons. PGE1 enhanced the effects of bradykinin and histamine on nociceptive cells and increased the response of these cells to the application of noxious heat. These findings support a chemosensitivity theory of nociceptor activation and indicate that bradykinin is the most potent and specific of the putative endogenous algesic agents in causing activation of central nociceptive pathways. 35 references. (Author abstract modified)

003042 Benzi, Gianni; Arrigoni, Elena; Pastoris, Ornella; Villa, Roberto F.; Dagani, Fiorenzo; Marzatico, Fulvio; Agnoli, Alessandro. Institute of Pharmacology, Dept. of Science, University of Pavia, Pavia, Italy **Effect of some drugs on cerebral energy state during and after hypoxia and complete or incomplete ischemia.** Biochemical Pharmacology (Oxford). 28(3):435-439, 1979.

The effects of caffeine, nicergoline, and medibazine were evaluated in the brain of beagle dogs during various experimental conditions of cerebral damage (hypoxia, hypoxia plus incomplete ischemia, hypoxia plus complete ischemia), during posthypoxic recovery and restoration of circulation. The behavior of fuels (glycogen, glucose), or glycolytic pathway intermediates (glucose-6-phosphate, pyruvate) and end product (lactate), as well as the pool of labile phosphates (ATP, ADP, AMP, creating phosphate) and the energy charge potential were evaluated in the motor area of the cerebral cortex. The drugs tested proved unable to improve the deranged brain metabolism and the energy charge potential under these various hypoxemic conditions. On the contrary, a certain pharmacological effect of nicergoline and medibazine could be observed both in the post hypoxic recovery and in the recovery following hypoxia plus complete ischemia, caffeine being totally ineffective. 30 references. (Author abstract)

003043 Bergstrom, Debra A.; Kellar, Kenneth J. Kellar: Department of Pharmacology, Georgetown University, School of Medicine, 3900 Reservoir Road, NW, Washington, DC 20007 **Adrenergic and serotonergic receptor binding in rat brain after chronic desmethylimipramine treatment.** Journal of Pharmacology and Experimental Therapeutics 209(2):256-261, 1979.

The kinetics properties of alpha-adrenergic, beta-adrenergic, and serotonergic receptor binding sites were examined in cortical and subcortical brain regions of male Sprague-Dawley rats treated chronically for various time periods with the tricyclic antidepressant desmethylimipramine (DMI, 6mg/kg/day i.p.). Beta-receptor binding density in the cortex was significantly decreased after 1 week of daily DMI injection, and the reduced density of cortical beta-receptors was evident for 12 weeks. A significant reduction in subcortical beta-receptors was not evident until after 6 weeks of DMI treatment. Chronic DMI lowered tritiated dihydroalprenolol binding in the hippocampus but not in the striatum. No consistent differences in alpha-adrenergic or serotonergic binding in the cortex or subcortical forebrain were detected after 12 weeks treatment with DMI. Results indicate that chronic DMI administration selectively decreases the density of beta-adrenergic receptors in rat brain. 41 references. (Author abstract modified)

003044 Bernasconi, R.; Martin, P. Research Department, Pharmaceuticals Division, CIBA-GEIGY Ltd., Basel, Switzerland **Effects of antiepileptic drugs on the GABA turnover rate.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R63, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of benzodiazepines and other antiepileptic drugs on the turnover of gamma-aminobutyric acid (GABA) in mouse brain are described. Diazepam and oxazepam produced dose related reductions in GABA turnover in various regions of mouse brain; these effects were stereospecific and dependent on the affinity of the benzodiazepine for the receptor. Although ()-2-amino-2'-(o-chlorbenzoyl)-4'-nitro-propionanilide lowered the GABA turnover rate, the (-)-isomer of this compound was inactive up to 10mg/kg i.p. Carbamazepine caused a dose dependent reduction GABA turnover, but chemically related compounds without antiepileptic effects were inactive in oral doses up to 300mg/kg. Sodium valproate caused a dose dependent reduction in GABA turnover. The carbonic anhydrase inhibitor acetazolamide had no effect on GABA turnover, in oral doses up to 300mg/kg. Phenobarbital (50mg/kg oral) did not alter the steady state concentration of GABA, but did reduce GABA turnover rate. (Author abstract modified)

003045 Bevan, P.; Bradshaw, C. M.; Pun, R. Y. K.; Slater, N. T.; Szabadi, E. Dept. of Pharmacology, Sandoz A. G., Ch-4002, Basel, Switzerland **The action of microelectrophoretically applied (3,4-dihydroxy-phenylamino) 2 imidazoline (DPI) on single cortical neurones.** British Journal of Pharmacology (London). 65(4):701-706, 1979.

The effects of microiontophoretically applied (3,4-dihydroxyphenylamino)-2-imidazoline (DPI), dopamine, and phenylephrine on single neurons in the cerebral cortex of the male Wistar rat were compared. DPI and phenylephrine were almost exclusively excitatory, whereas dopamine evoked both excitatory and depressant responses. DPI was more potent than dopamine in producing excitatory responses and was about equipotent with phenylephrine. The dopamine antagonist haloperidol could discriminate between excitatory responses to DPI and dopamine: responses to dopamine were abolished, whereas responses to DPI and to acetylcholine were unaffected. The alpha-adrenoceptor antagonist, phenoxybenzamine, antagonized responses equally to DPI and phenylephrine. Responses to acetylcholine were not affected. It is concluded that DPI does not stimulate dopamine receptors on cortical neurones; the excitatory responses of these cells to DPI may be mediated by alpha-adrenoceptors. 17 references. (Author abstract modified)

003046 Bhargava, Hemendra N. Department of Pharmacognosy and Pharmacology, University of Illinois at the Medical Center, Chicago, IL 60612 **The synthesis rate and turnover time of 5-hydroxytryptamine in brains of rats treated chronically with morphine.** British Journal of Pharmacology (London). 65(2):311-317, 1979.

Brain 5-hydroxytryptamine (5-HT) dynamics were examined in male Sprague-Dawley rats made tolerant to and dependent on morphine by one of four schedules of chronic morphine treatment. The rate of accumulation of 5-HT after monoamine oxidase inhibition by pargyline indicated that brain 5-HT turnover rates were not altered in the morphine tolerant and dependent rats, compared to controls. Turnover rates for 5-HT in rats withdrawn from morphine for 24 hours were not significantly different from those of controls. It is concluded that morphine tolerance and dependence in the rat is not associated with changes in 5-HT synthesis and turnover. 24 references. (Author abstract modified)

003047 Bianchi, A.; Drago, F.; Canonico, P. L.; Guarcello, V.; Carpiniello, B.; Scapagnini, U. Viale Raffaello 18, I-80129 Naples, Italy **Neuroendocrine effects of bromperidol.** Acta Psychiatrica Belgica (Bruxelles). 78(1):69-82, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, the neuroleptic effects of bromperidol are examined. The antagonistic effects of bromperidol on dopamine (DA) receptors regulating hypothalamic luteinizing hormone releasing hormone (LHRH) were compared in vitro to those of haloperidol, and the capacity of bromperidol to remove apomorphine-induced blockade of cold stress stimulated thyrotropin secreting hormone (TSH) release was evaluated. In addition, bromperidol effects on prolactin release were compared with those of haloperidol and pimozide in adult male rats. Results showe that bromperidol is able to antagonize the DA-induced LHRH release as well as haloperidol. The butyrophenones, in contrast to pimozide, partially removed the inhibitory effect of L-Dopa and apomorphine on TSH release. In vivo and in vitro experiments indicated that the antidopaminergic action of bromperidol, evaluated by prolactin release, can be considered intermediate between haloperidol and pimozide. 24 references. (Author abstract modified)

003048 Bjorklund, Anders; Segal, Menahem; Stenevi, Ulf. Department of Histology, University of Lund, Lund, Sweden **Functional reinnervation of rat hippocampus by locus coeruleus implants.** Brain Research (Amsterdam). 170(3):409-426, 1979.

Transplants of the embryonic locus coeruleus (LC) region were implanted into the circuity of the hippocampal formation in adult female Sprague-Dawley rats in which the normal adrenergic afferents to the hippocampus had been removed. In successful cases, the entire hippocampal formation was reinnervated from the LC implant within 3-6 months after operation, and the newly formed innervation persisted for at least 14 months. The pattern formed by the ingrowing LC axons mimicked to a large extent that of normal LC afferents. Little growth was seen into denervated terminal fields of the commissural, septal, or entorhinal afferents, pointing to a preference of the ingrowing LC fibers for the areas normally innervated by adrenergic afferents. In electrophysiological experiments, stimulation of the LC implants caused an inhibition of the spontaneous activity of neurons in the host hippocampus similar to that observed after stimulation of the innate LC in the intact rat. As in the normal rat, the inhibitory responses were blocked by systemic or local application of the beta-adrenergic receptor blockers propranolol or sotalol. Results indicate that the adult rat brain is capable of carrying out all steps involved in correct functional reinnervation of a denervated region. 21 references. (Author abstract modified)

003049 Blanchard, J. C.; Boireau, A.; Garret, C.; Julou, L. Rhone-Poulenc Research, Centre Nicholas Frillet, Vitry-sur-Seine, FG-94400, France **In vitro and in vivo inhibition by zopiclone of benzodiazepine binding to rodent brain receptors.** Life Sciences (Oxford). 24(26):2417-2420, 1979.

Zopiclone, a new drug with a pharmacological profile similar to that of chlordiazepoxide and nitrazepam but chemically unrelated to the benzodiazepines, was tested for its ability to inhibit benzodiazepine binding. In vivo and in vitro studies in male CD1 rats demonstrated the ability of zopiclone to inhibit the binding of tritiated diazepam and flunitrazepam to brain receptors. The potency of zopiclone was comparable to that of diazepam and nitrazepam in vitro and to that of chlordiazepoxide in vivo. These results confirm the pharmacological similarities between zopiclone and the benzodiazepines. 10 references. (Author abstract modified)

003050 Blaustein, Jeffrey D.; Feder, Harvey H. Institute of Animal Behavior, Rutgers University, Newark, NJ 07102 **Cytoplasmic progestin-receptors in guinea pig brain: characteristics and relationship to the induction of sexual behavior.** Brain Research (Amsterdam). 169(3):481-497, 1979.

The synthetic progestin R-5020 was used to measure cytoplasmic progestin receptors in the brain and pituitary gland of ovariectomized Hartley guinea pigs. Progestin receptors with a dissociation constant of 0.1-0.3nM were found in brain, pituitary gland, and uterus. The receptor was progestin specific; biologically potent progestins competed successfully against tritiated R-5020 for binding, but androgens, glucocorticoids, and estrogens did not. The concentration of the cytoplasmic progestin receptor in hypothalamus/preoptic area/septum and in midbrain was decreased in vivo by behaviorally effective doses of progesterone. In the pituitary, hypothalamus, preoptic area/septum, and midbrain (but not other brain regions), the concentration of progestin receptors increased after estradiol benzoate priming. After a single injection of 1.6mcg estradiol benzoate, the latency to an increase and subsequent decrease in cytoplasmic progestin receptors in the hypothalamus/preoptic are/septum correlated well with the previously reported time course for progesterone's facilitation of sexual receptivity after estradiol benzoate injection. Results suggest that brain progestin receptors may mediate at least some of the behavioral effects of progesterone. 63 references. (Author abstract modified)

003051 Blume, H. W.; Lamour, Y.; Arnauld, E.; Layton, B. S.; Renaud, L. P. Renaud: Division of Neurology, Montreal General Hospital, Montreal, Quebec, H3G 1A4, Canada **Sodium di-n-**

propylacetate (valproate) action on single neurons in rat cerebral cortex and hippocampus. Brain Research (Amsterdam). 171(1):182-185, 1979.

The microiontophoretic application of sodium di-n-propylacetate (valproate) enhanced the excitability of 59 of 64 cerebral cortical neurons and 7 of 8 hippocampal neurons in male Sprague-Dawley rats. In sensitive, spontaneously active neurons (80%), the action of valproate was rapid in onset, readily reversible, and comparable to the excitatory actions of glutamate and aspartate. Neurons that lacked spontaneous activity usually did not respond to valproate alone, but did show an increase in their excitability during concurrent applications of glutamate or aspartate. In 22 neurons whose excitability was enhanced by acetylcholine (ACh), concurrent applications of valproate had no apparent effect. The excitatory actions of valproate, glutamate, aspartate, and ACh were all antagonized by gamma-aminobutyric acid. These findings suggest that valproate enhances neuronal excitability, possibly through an action that involves glutamate and aspartate but not ACh. The significance of these findings for the anticonvulsant action of valproate is discussed. 15 references.

003052 Boulton, A. A.; Juorio, A. V. Psychiatric Research Division, University Hospital, Saskatoon, Saskatchewan, Canada **The tyramines: are they involved in the psychoses?** Biological Psychiatry. 14(2):413-419, 1979.

Attention is drawn to two isomers of tyramine, meta and para, and the changes in their endogenous concentrations that are induced by antipsychotic drugs and their possible relationship to certain clinical conditions. It is suggested that one or both of these amines may be involved in the etiology of the psychoses and other clinical conditions. On the evidence that the administration of some antipsychotic drugs and d-amphetamine, separately and in combination, induced changes in the concentration of striatal para and meta tyramine, it is proposed that the tyramines may possess a role in neural function. It is suggested that this function could be as neurotransmitters in specific neuronal systems or as synaptic activators. 44 references. (Author abstract modified)

003053 Bowers, Malcolm B., Jr.; Bowers, Stephen M. Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510 **Catalepsy, DOPAC, and acetylcholine during chronic fluphenazine administration.** Communications in Psychopharmacology. 2(6):533-537, 1978.

In male albino rats injected intramuscularly with 1mg/kg fluphenazine enanthate every other day, the emergence and waning of catalepsy was associated with changes in levels of dihydroxyphenylacetic acid (DOPAC) and acetylcholine (ACh) in the caudate. A marked degree of tolerance developed in these variables during the course of drug treatment; after about 2 weeks of fluphenazine, the acute changes in catalepsy, DOPAC, and ACH were reduced by 50-70%. No significant acute or chronic changes in ACh in olfactory tubercle or cerebral cortex were observed. The processes responsible for the manifestations of restored dopaminergic transmission in spite of continued treatment with a high dose of a potent neuroleptic are discussed. 15 references. (Author abstract modified)

003054 Braestrup, C.; Nielsen, M.; Squires, R. F.; Laurberg, S. Department of Biochemistry, A/S Ferrosan, Sydmarken 1-5, DK-2860 Soeborg, Denmark **Benzodiazepine receptor in brain.** Acta Psychiatrica Scandinavica. Supplementum 274:27-32, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines, held in Stockholm, November 1977, is provided. The evidence that the brain possesses specific receptors for benzodiazepines is summarized. A series of brain lesion experiments in rats showing that specific neuronal destructions by 6-hydroxydopamine, kainic acid in the striatum, x-ray irradiation of the hippocampus, intraperitoneal 3-acetylpyridine or hemisection at the thalamic level do not reduce the level of benzodiazepine receptors in striatum, hippocampus, cortex or cerebellum is presented. It is concluded that these results show that the benzodiazepines are not positioned on dopamine or noradrenaline terminals, cholinergic or GABAergic neurons in the striatum, granular cells in the hippocampus or climbing fibers in the cerebellum. 16 references. (Author abstract modified)

003055 Braestrup, Claus; Nielsen, Mogens; Squires, R. F. Psychopharmacological Research Laboratory, Sct. Hans Mental Hospital, Dept. E, DK-4000 Roskilde, Denmark **No changes in rat benzodiazepine receptors after withdrawal from continuous treatment with lorazepam and diazepam.** Life Sciences (Oxford). 24(4):347-350, 1979.

The effects of prolonged (8 week) treatment of Wistar rats with 90mg/kg/day oral diazepam or 60mg/kg/day oral lorazepam and subsequent withdrawal on brain benzodiazepine receptors were studied. No consistent changes in the number of benzodiazepine receptors or apparent affinity for diazepam was observed in vitro in forebrain membranes prepared 5 and 11 days after withdrawal. Daily exposure of Wistar rats from 10 days before birth until 7 days after birth also failed to significantly affect benzodiazepine receptors. These results indicate that abstinence and tolerance to benzodiazepines can not be attributed to changes in brain benzodiazepine receptors. 23 references. (Author abstract modified)

003056 Brautigam, M.; Halbhubner, K.; Loos, D.; Noske, W. Pharmakologisches Institut der Freien Universitat Berlin, Thielallee 69/73, D-1000 Berlin 33, Germany **Spinal and supraspinal disturbances by 6-aminonicotinamide.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R68, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of 6-aminonicotinamide (6-AN) in the central and peripheral nervous systems are described. After i.p. injection of 10mg/kg 6-AN in rats, there was a time dependent production of 6-phosphogluconate (6-PG) and gluconate in the spinal cord, other parts of the CNS, and sciatic nerve. The ratio of 6-PG to gluconate was about 2.5:1 in the CNS and 1:2.5in the sciatic nerve. After subarachnoidal injection of 35mcg/kg 6-AN into the lumbar region, the concentrations of 6-PG and gluconate in the lower spinal cord were comparable to those following systemic administration. Values decreased in the cranial direction, however, and normal values were obtained above the medulla oblongata. Comparison of the findings in CNS and peripheral nerve suggest that 6-AN and/or 6-PG and gluconate are not transported axonally within 48 hours. (Author abstract modified)

003057 Breese, George R.; Mueller, Robert A.; Mailman, Richard B. 226 Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Effect of dopaminergic agonists and antagonists on in vivo cyclic nucleotide content: relation of guanosine 3',5'-monophosphate (cGMP) changes in cerebellum to behavior.** Journal of Pharmacology and Experimental Therapeutics 209(2):262-270, 1979.

Apomorphine produced a dose related increase in guanosine 3',5'-monophosphate (cGMP) levels in the Sprague-Dawley rat cerebellum without consistently affecting cGMP content in the striatum. The elevation in cerebellar cGMP induced by apomorphine was antagonized by the cis, but not the trans, isomer of

flupenthixol and was enhanced by 6-hydroxydopamine (6-OHDA) treatments that reduced dopamine. Selected antipsychotic drugs antagonized the increase in cerebellar cGMP after apomorphine in proportion to their potency in blocking dopamine receptors. Neither apomorphine nor antipsychotic drugs altered cyclic adenosine 3',5'-monophosphate in the cerebellum or striatum. D-amphetamine and methylphenidate increased cerebellar cGMP, while other proposed dopaminergic agonists (bromocriptine, lergotrile, and piribedil) did not alter cGMP content in the cerebellum except in 6-OHDA treated rats. Paralysis with d-tubocurarine attenuated the action of apomorphine on cerebellar cGMP and reduced levels of cerebellar cGMP. 57 references. (Author abstract modified)

003058 Brennan, M. J. W.; Cantrill, R. C. Dept. of Medical Biochemistry, Medical School, University of Witwatersrand, Johannesburg 2001, South Africa **The effect of delta-aminolaevulinic acid on the uptake and efflux of (3H)GABA in rat brain synaptosomes.** Journal of Neurochemistry (Oxford). 32(6):1781-1786, 1979.

The effect of delta-aminolaevulinic acid (delta-ALA) on the uptake and efflux of tritiated gamma-aminobutyric acid (GABA) in the synaptosomal fraction of Wistar rat cerebral cortex was examined. High concentrations (0.75-5mM) of delta-ALA markedly stimulated (3H)GABA release, but low concentrations (0.1-0.5mM) produced little stimulation. At a concentration of 0.1mM, delta-ALA reduced the stimulation of (3H)GABA efflux elicited by 55mM potassium ion (K); the combination of 1mM delta-ALA and 55mM K produced a lower stimulation of efflux than 1mM delta-ALA alone. Delta-ALA inhibited (3H)GABA uptake in a linearly competitive fashion. Inhibition was maximal at 0.5mM delta-ALA. Results are discussed in relation to the neuronal high affinity GABA transport mechanism and the inhibition of synaptosomal sodium ion and K dependent adenosine triphosphatase. It is suggested that delta-ALA increases the chloride conductance of the synaptosomal membrane, possibly by acting on presynaptic GABA receptors. 32 references. (Author abstract modified)

003059 Briley, Patricia A.; Kouyoumdjian, Jean C.; Haidamous, Madona; Gonnard, Pierre. Biochemistry Department, University of Bath, Claverton Down, Bath BA2 7AY, England **Effect of L-glutamate and kainate on rat cerebellar cGMP levels in vivo.** European Journal of Pharmacology (Amsterdam). 54(1/2):181-184, 1979.

Intracerebroventricular administration of L-glutamate or kainate resulted in dose dependent increases in the level of cyclic guanosine monophosphate (cGMP) in male Sprague-Dawley rat cerebellum. The increased cGMP induced by L-glutamate, but not that induced by kainate, was completely abolished by the glutamate antagonist glutamate diethylester. Results suggest that L-glutamate and kainate act on different subpopulations of glutamate receptors, both of which may be involved in the regulation of cerebellar cGMP levels. 10 references. (Author abstract modified)

003060 Brodie, R. R.; Chasseaud, L. F.; Hawkins, D. R.; Midgley, I. Department of Metabolism and Pharmacokinetics, Huntingdon Research Centre, Huntingdon PE18 6ES, England **The pharmacokinetics and metabolism of 14C-amitriptylinoxide in rat and dog.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1907-1910, 1978.

The excretion and plasma concentrations of radioactivity and the nature of the radioactive components in excreta were compared in rats and dogs after 2mg/kg oral doses of the tranquillizing drug, amitriptylinoxide, using a C-labelled form. In rats, means of 38.0% and 60.7% of a single dose were excreted in the urine and feces, respectively, during 5 days. In dogs, means of 64.2% and 26.6% of a similar oral dose were excreted in urine and feces, respectively, during the same time period. 9 references. Peak plasma concentrations of radioactivity in rats occurred after 4 hr and represented 140ng/ml. Highest concentrations of radioactivity in rat tissues occurred at about 2 hr in the liver, kidneys, and lungs. No unchanged drug was detected in rat excreta, but it represented about 10% of the dose in dog urine. It is concluded that the metabolism of amitripylinoxide is more extensive in the rat and dog than in man. (Author abstract modified)

003061 Brown, D. A.; Galvan, M. Department of Pharmacology, School of Pharmacy, University of London, 29-39 Brunswick Square, London WC1N 1AX, England **Responses of the guinea-pig isolated olfactory cortex slice to gamma-aminobutyric acid recorded with extracellular electrodes.** British Journal of Pharmacology (London). 65(2):347-353, 1979.

Potential changes between the pial and cut surfaces of guinea-pig cortical slices produced by gamma-aminobutyric acid (GABA) were recorded with extracellular electrodes. When superfused over the pial surface, 0.1-10mM GABA produced a pial negative potential deflection, accompanied by an inhibition of the postsynaptic response to lateral olfactory tract stimulation. This effect was replicated by 3-aminopropanesulfonic acid, delta-aminovaleric acid, beta-alanine, beta-amino-n-butyric acid, epsilon-aminocaproic acid, alpha-amino-isobutyric acid, and L-leucine. L-Glutamate (1-10mM) produced a large surface negative shift, with relatively less synaptic inhibition. Glycine (1-10mM) produced less surface negativity, accompanied by synaptic inhibition. Bicuculline (3-30mcM) and picrotoxin (1-30mcM) antagonized responses to GABA more effectively than responses to glycine. Strychnine (1-10mcM) incompletely inhibited responses to glycine. 15 references. (Author abstract modified)

003062 Brown, D. A.; Scholfield, C. N. Department of Pharmacology, School of Pharmacy, University of London, 29-39 Brunswick Square, London WC1N 1AX, England **Depolarization of neurones in the isolated olfactory cortex of the guinea-pig by gamma-aminobutyric acid.** British Journal of Pharmacology (London). 65(2):339-345, 1979.

Gamma-aminobutyric acid (GABA, 5-200mcM) depolarized and reduced the resistance of single neurons in slices of guinea-pig olfactory cortex in vitro. Reduction of external chloride increased the amplitude of the GABA-induced depolarization. GABA reduced the amplitude of the excitatory postsynaptic potential produced by lateral olfactory tract stimulation and occluded or reversed the subsequent depolarizing recurrent inhibitory postsynaptic potential. Action potentials elicited by injection of depolarizing current or by focal antidromic stimulation were slowed and reduced in amplitude by GABA. The effects of GABA on membrane conductance were duplicated by 3-aminopropanesulphonic acid, beta-alanine, beta-amino-n-butyric acid, glycine, and L-2,4-diaminobutyric acid. Results suggest that GABA is involved in mediating recurrent postsynaptic inhibition. 26 references. (Author abstract modified)

003063 Bukard, W. P. Pharmaceutical Research Department, F. Hoffmann-La Roche Co. Ltd., CH-4002 Basle, Switzerland **Properties of 3H-cimetidine binding to histamine H2-receptors in the brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R66, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the specific, high affinity binding of tritiated cimetidine, a histamine H2-receptor antagonist, to washed guinea-pig brain

membranes is described. Binding was saturable and reversible, with a dissociation constant of 42nM. The maximal amount of specific 3H-cimetidine binding was 0.58pmol/mg protein. Cimetidine binding reached half maximal values within 7 minutes and achieved equilibrium by 30 minutes. The specific binding showed a linear dependence on protein and a pH optimum of 7.4Cimetidine binding was temperature dependent, with maximal binding at 4 degrees C, minimal binding at 37 degrees, and no specific binding in boiled homogenates. The H2-receptor antagonists burimamide, metiamide, and cimetidine inhibited 3H-cimetidine binding by 50% at 300, 45, and 27nM, respectively. All other drugs tested, including H1-antihistamines, H2-receptor agonists, and alpha-adrenergic agonists or antagonists were less than 0.001 as potent as cimetidine. These characteristics of the specific binding site provide further evidence for the existence of histamine H2-receptors in mammalian brain. 1 reference. (Author abstract modified)

003064 Burlet, A.; Chateau, M.; Czernichow, P. Laboratorire d'Histologie et de Physiologie, Faculte de Medecine, F-54000 Nancy, France **Infundibular localization of vasopressin, oxytocin and neurophysins in the rat; its relationships with corticotrope function.** Brain Research (Amsterdam). 168(2):275-286, 1979.

The distribution of vasopressin (VP), oxytocin (OXY), and neurophysins (N1 and N2) in the median eminence (ME) of normal, heterozygous (HDI), and Brattleboro (DI) rats was examined. Numerous thin periportal VP and N2 fibers were found in normal and HDI rats, but not in DI rats. N1 and OXY fibers in the external alyer of the ME were rare. Adrenalectomy increased periportal VP and N2 loading in normal and HDI rats, but did not modify the appearance of the ME in DI rats. Dexamethasone prevented external VP and N2 overloading in adrenalectomized rats. Suprachiasmatic neurons were stained only by anti-VP and anti-N2 antibodies. The overstaining of these neurons induced by adrenalectomy was reversed by dexamethasone, aldosterone, or VP treatment. This central effect of the hormones was not necessarily associated with the disappearance of overlaoding in the external layer of the ME. The involvement of the hypothalamoinfundibular tract carrying VP and N2 in regulating mechanisms of the corticotrope axis is discussed. 49 references. (Author abstract modified)

003065 Burt, David R. Department of Pharmacology and Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD 21201 **Thyrotropin releasing hormone: apparent receptor binding in retina. (Unpublished paper).** Research Report, NIMH Grant MH-29671, 1979. 25 p.

Specific (3H) thyrotropin releasing hormone (TRH) binding in sheep pituitary and retina was measured relative to blanks containing 1microM (3-Me-His2)TRH, an analog more selective and tenfold more potent than TRH. Incubations were zero degrees centigrade; bound radioactivity was separated by filtration. High affinity retinal TRH binding sites resembled pituitary receptors in: (1) equilibrium dissociation constant; (2) rate constant for association; (3) rate constant for dissociation; and (4) effectiveness of 16 TRH analogs, ranging over six orders of magnitude in potency, in competing for binding. Major differences were: (1) the retinal binding sites were present in only one quarter the concentration of pituitary receptors; and (2) the pharmacological properties of retinal binding sites were partially obscured by the simultaneous presence of low affinity binding sites, absent in pituitary, with which six analogs appeared to compete more potently than for high affinity sites. These findings support the possibility that TRH or a closely related substance acts as a peptide neurotransmitter or neuromodulator in the retina. 25 references. (Author abstract modified)

003066 Cain, Donald P.; Corcoran, Michael E.; Wada, Juhn A.; Troupin, Allan S. Department of Psychology, University of Western Ontario, London, Ontario, N6A 5C2, Canada **Post-trial barbiturates do not affect amygdaloid kindling.** Behavioral and Neural Biology. 26(2):202-208, 1979.

The effect of posttrial barbiturate injection on amygdaloid kindling was assessed using two different barbiturates. Hooded rats were stimulated electrically in a standard kindling paradigm, and received one of the barbiturates either immediately following the cessation of afterdischarge (AD) or 2 hours following each stimulation. Appropriate nondrugged controls were also stimulated. Treated animals kindled as rapidly as controls, indicating that undisturbed post-AD neural activity is not crucial for amygdaloid kindling. However, it appears that animals stimulated at long intervals develop seizures significantly faster than those stimulated at shorter intervals, which may indicate that a nonessential but facilitatory process occurs following each evoked afterdischarge. 7 references. (Author abstract)

003067 Caruso, Thomas P.; Takemori, A. E.; Larson, Dennis L.; Portoghese, Philip S. Dept. of Pharmacology, University of Minnesota Medical School, Minneapolis, MN 55455 **Chloroxymorphamine, an opioid receptor site-directed alkylating agent having narcotic agonist activity.** Science. 204(4390):316-318, 1979.

Chloroxymorphamine (COA), a derivative of oxymorphone, was studied for its ability to act as a nonequilibrium narcotic agonist in the longitudinal muscle preparation of guinea-pig ileum. The corresponding naltrexone analog, chlornaltrexamine (CNA), was studied to investigate its nonequilibrium nature and specificity. The studies show COA to be a potent narcotic agonist and CNA to be a potent antagonist of morphine. It is suggested that their sustained effects are due to receptor alkylation. The ability of naloxone to block these effects and the absence of similar effects with phenoxybenzamine or chlorambucil demonstrate the specificity of action of COA and CNA. The ability of both agents to act in a nonequilibrium fashion indicates that the aziridinium intermediates derived from these ligands are alkylating a nucleophilic group that is located in an identical or similar receptor environment during the equilibrium phase binding. It is suggested that these compounds will be of value as pharmacologic and biochemical probes of opioid receptors. 8 references. (Author abstract modified)

003068 Cerreta, Kenneth V.; Flynn, Edward J.; Spector, Sydney. Division of Biochemistry, Physiology, and Pharmacology, School of Medicine, University of South Dakota, Vermillion, SD 57069 **Pharmacologic response to pentobarbital in passively immunized mice.** European Journal of Pharmacology (Amsterdam). 54(4):365-371, 1979.

The effects of passive immunization on the disposition and pharmacologic action of barbiturates were investigated in male Swiss-Webster mice. Antiserum obtained from rabbits actively immunized with a barbiturate-BGG conjugate was injected intravenously in mice to obtain passive immunization. The antibody binding capacity for tritiated phenobarbital was sustained in the passively immunized mice for up to 3 weeks. Serum levels of tritiated phenobarbital in passively immunized mice differed from those of control mice after drug administration; there was four times the amount of tritiated phenobarbital in the serum of passively immunized mice than in control animals. The higher barbiturate levels were due to binding of tritiated phenobarbital to a globulin fraction of serum in the passively immunized mice. Decreased pentobarbital-induced ataxia was also observed in the passively immunized animals. Ataxia produced by ethanol was not modified in these animals. 17 references. (Author abstract modified)

003069 Champagnat, J.; Denavit-Saubie, M.; Henry, J. L.; Leviel, V. Centre National de la Recherche Scientifique, Lab. de Physiologie Nerv., Dept. de Neurophysiologie appliquee, 91 190 Gif-sur-Yvette, France **Catecholaminergic depressant effects on bulbar respiratory mechanisms.** Brain Research (Amsterdam). 160(1):57-68, 1979.

The involvement of catecholamines in central mechanisms controlling respiration was examined in iontophoretic studies on neurons in bulbar respiratory centers of decerebrate cats. Adrenaline and noradrenaline had a predominantly depressant effect on respiratory units and on closely situated nonrespiratory units. These depressions were mimicked by the application of isoproterenol and clonidine; acetylcholine and serotonin had inconsistent effects on these neurons. Microinjection of noradrenaline, but not of serotonin, into the bulbar respiratory centers resulted in depression of central respiratory activity, reflected in the phrenic nerve discharge. Results suggest that specific adrenergic and other and noradrenergic depressant mechanisms may affect respiratory and other physiological centers at the bulbar level. 38 references. (Author abstract modified)

003070 Chang, Raymond S. L.; Tran, Vinh Tan; Snyder, Solomon H. Dept. of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Heterogeneity of histamine H1-receptors: species variations in (3H)mepyramine binding of brain membranes.** Journal of Neurochemistry (Oxford). 32(6):1653-1663, 1979.

Tritiated mepyramine binding associated with histamine H1-receptors was studied in membranes from human, rat, guinea-pig, rabbit, and mouse brain. Considerable species differences in the affinity of (3H)mepyramine were observed, with guinea-pig and human brain having three to six times greater affinity than rat, mouse, or rabbit. Species differences in affinity for H1-receptor sites were observed for some but not all, antihistamines. Some tricyclic antidepressant and neuroleptic drugs were extremely potent inhibitors of (3H)mepyramine binding, exceeding the H1 antihistaminics in potency. Doxepin and clozapine were the most potent of all drugs examined in competing for (3H)mepyramine binding. The regional distribution of specific (3H)mepyramine binding differed considerably in the various species examined. 30 references. (Author abstract modified)

003071 Chang, Yen-Yun Helen; Ho, I. K. Dept. of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, MS 39216 **Effects of acute and chronic administration of pentobarbital on catecholamine uptake in mouse brain synaptosomes.** Research Communications in Chemical Pathology and Pharmacology. 23(3):465-474, 1979.

Pentobarbital, in concentrations up to 0.0001M, had no effect on the uptake of catecholamines into male ICR mouse brain synaptosomes in vitro. However, a significant attenuation of dopamine and norepinephrine uptake was observed in mice treated acutely or chronically with pentobarbital. The decrease in uptake of catecholamines during development of tolerance to pentobarbital was restored by abrupt withdrawal of pentobarbital. Results suggest that the acute and chronic effects of pentobarbital on catecholamine uptake may be associated with the development of tolerance to pentobarbital. 11 references. (Author abstract modified)

003072 Charington, C. Barry; Tsui, David; Wood, James D. Department of Biochemistry, University of Saskatchewan, Saskatoon, Canada S7N 0W0 **Alteration of GABA metabolism in mammalian brain by L-alpha amino-beta-chloropropionic acid hydroxamide and related compounds.** European Journal of Pharmacology (Amsterdam). 55(3):247-255, 1979.

L-alpha-amino-beta-chloropropionic acid hydroxamide (L-ACPH) significantly inhibited male Swiss mouse brain gamma-aminobutyric acid-alpha-oxoglutarate aminotransferase (GABA-T) activity in doses as low as 0.25mmol/kg. Minimum levels of GABA-T activity were seen 3 hours after administration of the drug. L-ACPH totally inhibited alanine aminotransferase activity, but did not affect brain glutamic acid decarboxylase, or aspartate aminotransferase activities. Slight changes in L-ACPH structure caused great changes in potency: the chloro and hydroxamide groups were necessary for inhibitory activity. The administration of L-ACPH delayed the onset of drug-induced seizures but had a less noticeable effect against maximal electroshock. The addition ot L-ACPH to crude extracts from brain or to preparations of semipurified GABA-T also inhibited GABA-T activity. 29 references. (Author abstract modified)

003073 Childers, Steven R.; Creese, Ian; Snowman, Adele M.; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Opiate receptor binding affected differentially by opiates and opioid peptides.** European Journal of Pharmacology (Amsterdam). 55(1):11-18, 1979.

Opiate antagonists, opioid peptides, and some opiate agonists (etorphine, levorphanol, and phenazocine) displayed similar affinities in displacing tritiated opiate or methionine enkephalin binding to male Sprague-Dawley rat brain membranes. Other agonists, including the classic opiate analgesics morphine and oxymorphone, were 20-50 times weaker in displacing 3H-enkephalin binding than 3H-dihydromorphine binding. These agonists competed for 3H-enkephalin binding with shallow displacement curves and were weakened in displacing 3H-naloxone binding in the presence of sodium. These agonists differ from the other classes of opiate drugs in possessing a relatively hydrophilic component in their C-ring moieties, which may be the basis for the differential interactions of drugs with the opiate receptor. 31 references. (Author abstract modified)

003074 Chiu, Ted H.; Rosenberg, Howard C. Department of Pharmacology, Medical College of Ohio, Toledo, OH 43699 **GABA receptor-mediated modulation of 3H-diazepam binding in rat cortex.** European Journal of Pharmacology (Amsterdam). 56(4):337-345, 1979.

The effects of gamma-aminobutyric acid (GABA), buicuyulline, and bicucine on the specific binding of tritiated diazepam were examined in three membrane preparations of male Sprague-Dawley rat cortex. In the crude synaptosomal fraction, GABA had no effect on maximal binding affinity, and these effects were antagonized by GABA. In repeatedly washed membrane preparations and in washed, frozen, and thawed preparations, GABA increased binding affinity and, at high concentrations, increased Bmax. Bicuculline inhibited the effect of GABA on 3H-diazepam binding. About 0.00003M GABA was found in the assay medium containing crude synaptosomal fraction. Results indicate that endogenous GABA can influence the results of 3H-diazepam binding assays and that GABA and bicuculline affect 3H-diazepam binding through their binding to the specific GABA binding site. 32 references. (Author abstract modified)

003075 Chuang, De-Maw; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Evidence for internalization of the recognition site of beta-adrenergic receptors during receptor subsensitivity induced by (-) isoproterenol. (Unpublished paper).** Washington, DC, NIMH, 1979. 28 p.

The detection, in the supernatant of frog erythrocyte homogenates, of a protein which could bind (3H)-dihydroalprenolol, (3H)-DHA, with high affinity is reported, and findings which

support the view that the beta-adrenergic receptor desensitization caused by prolonged exposure to (-) isoproterenol is due, at least in part, to an internalization of the recognition site of beta-adrenergic receptors are presented. After various time periods of incubation with (-) isoproterenol, the extent of the increase in the density of (3H)-DHA binding sites in cytosol was paralleled by a proportional decrease in the corresponding pellet of the number of (3H)-DHA binding sites. The increase in cytosol binding elicited by (-) alprenolol which per se failed to change the cytosol binding of (3H)-DHA binding sites resemble the surface membranes recognition sites. Moreover, the ability of various beta-adrenergic agents to increase (3H)-DHA binding to cytosol after they were incubated with frog erythrocytes paralleled their affinity for membrane bound beta receptors. 26 references. (Author abstract modified)

003076 Clark, Wesley G. Department of Pharmacology, Southwestern Medical School, University of Texas Health Science Center, Dallas, TX 75235 **Influence of opioids on central thermoregulatory mechanisms.** Pharmacology Biochemistry and Behavior. 10(4):609-613, 1979.

Research on the effects of morphine and endogenous opioid peptides on thermoregulation is reviewed. Morphine, endogenous opioid peptides, and other opioids such as pentazocine all cause hyperthermia, but the considerable variation in the dose of naloxone required to antagonize the different agonists indicates that more than one type of opiate receptor is involved in these pharmacologic responses. The minimal effect of naloxone and naltrexone on normal body temperature and on pyrogen induced fever indicates that the endogenous opioid peptides are not likely to act physiologically via stimulation of receptors specifically sensitive to morphine. However, methionine-enkephalin is less readily antagonized by naloxone and may have a physiologic role in thermoregulation through stimulation of another type of opiate receptor. 66 references. (Author abstract modified)

003077 Clow, A.; Jenner, P.; Theodorou, A.; Marsden, C. D. University Department of Neurology, Institute of Psychiatry, London SE5 8AF, England **Neuroleptic drugs and the dopamine hypothesis.** Lancet (London). No. 8122:934, 1979.

In a letter to the editor, the dopamine hypothesis which postulates that schizophrenia is caused by the overactivity of cerebral dopamine function is questioned. Studies with rats who have been given trifluoperazine (2.5-3.5mg/kg/day) or thioridazine (30-40mg/kg/day) for a year and after drug withdrawal for up to 3 months after the drug is discontinued drugs indicate the same biochemical changes recorded in postmortem brains of schizophrenia patients, namely increases in dopamine and DOPAC, changes in 3H-spiperone receptor affinity, and increases in dopamine receptor density. The results indicate the need for caution in interpreting postmortem biochemical data in schizophrenia since changes in cerebral dopamine may be due to theraputic drugs rather than to the disease. 6 references.

003078 Contreras, Enrique; Marti, M. Cristina. Departamento de Farmacologia, Universidad de Concepcion, Concepcion, Chile **Sensitivity of mouse vas deferens to neurotransmitters: changes after morphine treatment.** British Journal of Pharmacology (London). 65(4):623-628, 1979.

The pharmacological responses of the isolated mouse vas deferens were examined after acute and chronic treatment with morphine. Morphine did not alter responses to exogeneous noradrenaline, adrenaline, or dopamine. Low doses of morphine depressed responses to acetylcholine; very high concentrations of morphine completely abolished responses to acetylcholine in about half the preparations, but potentiated responses to low concentrations of acetylcholine in the other half. The vas deferens of mice chronically treated with morphine showed increased sensitivity to exogenous noradrenaline, but decreased sensitivity to acetylcholine. Morphine enhanced responses of morphine tolerant preparations to noradrenaline but not to dopamine or acetylcholine. Results are in agreement with the theory that morphine tolerance may result from a form of disuse supersensitivity. 18 references. (Author abstract modified)

003079 Corda, M. G.; Casu, M., Biggio, G. Institute of Pharmacology, University of Cagliari, Cagliari, Italy **Decrease of cyclic GMP in cerebellar cortex by intrastriatal (-)-sulpiride.** European Journal of Pharmacology (Amsterdam). 55(3):327-330, 197.

Intraperitoneal administration of (-)-sulpiride (12-50mg/kg) produced a dose related decrease in cyclic guanosine monophosphate (cGMP) content in the cerebellar cortex of male Sprague-Dawley rats, but ()-sulpiride was completely inactive. The same results were obtained after intrastriatal injection of the enantiomers, but not after intracerebellar injection. These findings suggest that (-)-sulpiride modifies cerebellar cGMP levels through an action on striatal dopamine receptors. 10 references. (Author abstract)

003080 Costa, E.; Guidotti, A. Laboratory of Preclincal Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Molecular mechanisms in the receptor action of benzodiazepines.** Annual Review of Pharmacology and Toxicology. 18:531-545, 1979.

Evidence is presented which suggests that the interaction between the benzodiazepines and the allosteric protein modulator of gamma-aminobutyric acid (GABA) recognition sites may be relevant to explain the in vivo action of the benzodiazepines on GABA transmission. The rank order of potency for a small number of benzodiazepines to compete with the protein modulator is similar to that which causes a relief of anxiety. It is suggested that the use of benzodiazepines as a tool in pharmacological studies has helped to elucidate details of the supramolecular nature of the GABA receptor regulator unit and has helped to characterize the specificity and efficacy of these drugs in medication of the altered function of GABAergic synapses. A model for the receptor action of benzodiazepines is described and implications for their use in therapy are discussed. 95 references.

003081 Cox, B. M. Addiction Research Foundation, Palo Alto, CA 94304 **Characteristics of the increased response to electrical stimulation of ileum preparations from morphine pretreated guinea-pigs.** Life Sciences (Oxford). 24(16):1503-1510, 1979.

The relationship between electrical stimulus voltage or pulse duration and the tension generated in the resulting contractions was investigated in control and morphine tolerant guinea-pig ileum preparations. A greater maximal tension was observed in the morphine tolerant preparations. The response to exogenous acetylcholine was unchanged, suggesting the increase in tension reflected an increase in the amount of acetylcholine released by each stimulus. No change in threshold voltage for stimulation was observed. The neuronally mediated, opiate insensitive component of the response to electrical stimulation was unchanged in morphine tolerant preparations. Naloxone did not affect the relationship between stimulus pulse duration and response tension in control or morphine tolerant preparations. Results indicate that morphine tolerance is associated with general changes in the properties of opiate sensitive neurons, which can be demonstrated in the absence of opiate drugs. 15 references. (Author abstract modified)

003082 Creese, Ian; Padgett, Linda; Fazzini, Enrico; Lopez, Frederick. Department of Neurosciences, School of Medicine, University of California, San Diego, La Jolla, CA 92093 **3H-N-n-propylnorapomorphine: a novel agonist ligand for central dopamine receptors.** European Journal of Pharmacology (Amsterdam). 56(4):411-412, 1979.

The binding of tritiated N-n-propylnorapomorphine (3H-NPA) to bovine striatal dopamine receptors was examined. The binding of low concentrations of 3H-NPA was stereospecifically displaced by ()-bucaclamol. Saturation studies indicate there is one binding site for 3H-NPA, with a dissociation constant of 1.5nM and maximum binding capacity of 17pmol/g. Spiroperidol was the most potent dopamine antagonist in displacing 3H-NPA binding, with a median inhibitory concentration (IC50) of 1.5nM). Fluphenazine and haloperidol were similar in potency (IC50-'s 12 and 38nM), but were 10-150 times more active than chlorpromazine and promethazine. Racemic NPA was the most potent agonist examined (IC50, 5nM), being four times more potent than apomorphine and 40 times more potent than dopamine. Norepinephrine and epinephrine were 12-16 times weaker than dopamine, and serotonin was 200 times weaker than dopamine. The high specific activity and unusual characteristics of 3H-NPA binding suggest that 3H-NPA will be a useful probe in discriminating between different dopamine receptors. 55 references.

003083 Cubeddu, L. X.; Hoffmann, I. S.; Ferrari, G. B. Universidad Central de Venezuela, Facultad de Farmacia, Catedra de Farmacologia, Apartado Nueva Granada 40109, Caracas, Venezuela **Metabolism and efflux of (3H)dopamine in rat neostriatum: presynaptic origin of 3,4-(3H)dihydroxyphenylacetic acid.** Journal of Pharmacology and Experimental Therapeutics 209(2):165-175, 1979.

A method for the separation of dopamine (DA) and its metabolites was developed and used to study the metabolism of tritiated DA in the rat neostriatum. Results suggest that during resting efflux or exposure to reserpine-like agents, most of the 3,4-dihydroxyphenylacetic acid (DOPAC) is formed intraneuronally from DA, probably during its passage from the vesicles to the axonal membrane. Some of the amine escapes the nerves unmetabolized and can be converted to DOPAC at presynaptic sites after being reaccumulated by the neuron through a cocaine sensitive uptake process. The metabolites of DA in the medium always reflected those present in the tissue, and the proportions of 0-methylated-deaminated metabolites and DOPAC were similar in tissue and medium during and after drug exposure. These results indicate that measurements of tissue or medium DA metabolites equally reflect the preferential metabolic pathway of DA. 66 references. (Author abstract modified)

003084 Cutler, R. W. P.; Young, J. Dept. of Neurology, Stanford University School of Medicine, Stanford, CA 94305 **The effect of penicillin on the release of gamma-aminobutyric acid from cerebral cortex slices.** Brain Research (Amsterdam). 170(1):157-163, 1979.

The effect of penicillin on the release of endogenous amino acids from rat cerebral cortex slices was examined. Penicillin blocked the calcium dependent, potassium stimulated release of gamma-aminobutyric acid (GABA), but did not block the calcium independent, veratridine stimulated release of GABA. Penicillin had no effect on the release of other putative neurotransmitter amino acids. The inhibition of GABA release from nerve endings may explain in part the ability of penicillin to depress synaptic inhibitory mechanisms. 24 references. (Author abstract modified)

003085 Da Prada, M.; Picotti, G. B. Pharmaceutical Research Department, F. Hoffmann-La Roche & Co. Ltd., CH-4002 Basel, Switzerland **Content and subcellular localization of catecholamines and 5-hydroxytryptamine in human and animal blood platelets: monoamine distribution between platelets and plasma.** British Journal of Pharmacology (London). 64(4):653-662, 1979.

The content of adrenaline (Ad), noradrenaline (NA), and dopamine (DA) was measured radioenzymatically in human, guinea-pig, cat, rabbit, and rat blood platelets. In all platelet specimens, the content of the three catecholamines (CA) was several thousand times lower than that of 5-hydroxytryptamine (5-HT). In basal conditions, the NA concentration in platelets and plasma always exceeded that of Ad and dopamine. In rat and rabbit platelets, Ad, NA, and DA were present only in unconjugated form. Platelets of rats with storage pool deficiency (Fawn-hooded) contained much less 5-HT and CA than normal (Wistar) rat platelets. Following restraint stress, platelets of Fawn-hooded rats (in contrast to normal rat platelets) did not accumulate CA, in spite of a dramatic rise in plasma CA. Reserpine released CA and 5-HT from rabbit platelets in vivo. Subcellular fractionation experiments with rabbit platelets indicated that CA and 5-HT are most concentrated in the fraction consisting of pure 5-HT organelles. In humans and rabbits, the concentration gradient between platelets and plasma was much lower for CA than for 5-HT, suggesting a high affinity transport mechanism for 5-HT but not for CA. 52 references. (Author abstract modified)

003086 Dalton, Terence. Dept. of Zoology, Westfield College, Kidderpore Avenue, London NW3 7ST, England **Pharmacology of 5-hydroxytryptamine receptors in frog skin epithelium.** British Journal of Pharmacology (London). 65(4):579-585, 1979.

A series of 5-hydroxytryptamine (5-HT) analogues was tested to determine the relative importance of different regions of the 5-HT molecule in stimulating active sodium transport and in decreasing the passive mucosal to serosal chloride permeability across frog skin. Substitution in the ethyl amine side chain of 5-HT (producing 5-hydroxytryptophan) resulted in decreased receptor affinity and intrinsic activity. Removal of the side chain (forming 5-hydroxyindole) abolished activity. Methoxy substitution of the 5-OH moiety of 5-HT (producing 5-methoxytryptamine) had no effect on intrinsic activity but reduced affinity. Displacement of the hydroxyl group to position 6 diminished intrinsic activity and affinity. It is concluded that both the 5-HT induced physiolgical effects on ion transport across frog skin are mediated via a single receptor, which is distinct from alpha-adrenoceptors and beta-adrenoceptors. 18 references. (Author abstract modified)

003087 Damm, H. W.; Muller, W. E.; Wollert, U. Pharmakologisches Institut der Universitat Mainz, D-6500 Mainz, Germany **Is the benzodiazepine receptor purinergic?** European Journal of Pharmacology (Amsterdam). 55(3):331-333, 1979.

To determine if benzodiazephine receptors are purinergic, the effects of purine derivatives on specific tritiated flunitrazepam binding to rat brain homogenates were examined. Among the adenine derivatives, adenine itself was the most potent inhibitor of specific (3H)flunitrazepam binding, with about 50% inhibition at 1mM and slightly more than 10% inhibition at 0.1mM. All guanine derivatives showed only weak inhibition of specific (3H)flunitrazepam binding, varying from 15-30%. Inosine and hypoxanthine had about the same potency as guanosine, inhibiting binding by about 30% at 1mM. The purine metabolites xanthine, uric acid, and allantoin did not interact with specific 3(H)flunitrazepam binding. The most potent purine inhibitors of 3(H)flunitrazepam binding were the xanthine derivatives theophylline, caffeine, and aminophylline, with more than 50% inhi-

bition at 1mM and about 20% at 0.1mM. Results indicate that some purines interact with the benzodiazepine receptor, but provide no evidence that the endogenous neurotansmitter acting at the benzodiazepine receptor is a purine. 5 references.

003088 Danzin, Charles; Jung, Michel J.; Seiler, Nikolaus; Metcalf, Brian W. Centre de Recherche Merrell International, 16, rue d'Ankara, F-67084 Strasbourg Cedex, France **Effect of 5-hexyne-1,4-diamine on brain 4-aminobutyric acid metabolism in rats and mice.** Biochemical Pharmacology (Oxford). 28(5):633-639, 1979.

The effect of 5-hexyne-1,4-diamine on brain 4-aminobutyric acid metabolism was examined using male Sprague-Dawley rats 5-Hexyne-1,4-diamine, an enzyme activated irreversible inhibitor of ornithine decarboxylase, induces a rapid, long-lasting, dose dependent decrease of 4-aminobutyrate:2-oxoglutarate aminotransferase activity and to a lesser extent, of glutamate decarboxylase in the brains of rats when injected intraperitoneally. The 4-aminobutyric acid concentration in whole brain increased five fold over control values. The drug is a substrate of monoamine oxidase but not of diamine oxidase and is oxidized by a mitochondrial suspension to 4-amiohex-5-ynoic acid. This is a known potent inhibitor of 4-aminobutyrate:2-oxoglutarate aminotransferase and of glutamate decarboxylase. It is concluded that 4-aminohex-5-ynoic acid is formed in vivo from 5-hexyne-1,4-diamine by the same mechanism. 21 references. (Author abstract modified)

003089 Daszuta, Annie; Pons, Francoise; Cadilhac, Jean. Unite de Recherche Neurobiologique INSERM, 280 Bd. Sainte Marguerite, 13009 Marseille, France **Effect of serotonin on cyclic AMP level in rat hypothalamus slices during development.** European Journal of Pharmacology (Amsterdam). 56(4):397-401, 1979.

The effect of serotonin (5-HT) on cyclic adenosine 3',5'-monophosphate (AMP) levels in male Wistar rat hypothalamic slices varied with age. The cyclic AMP system was sensitive to 5-HT (0.00005M) as early as 21 days gestation, reached a maximum on postnatal day 7, and subsequently decreased with age. In adult tissue, the response to 5-HT was antagonized by methiothepin and metergoline. It is suggested that the development of 5-HT receptors occurs prior to the complete development of the appropriate presynaptic inputs. 15 references. (Author abstract modified)

003090 de Belleroche, J. S.; Bradford, H. F. Department of Biochemistry, Imperial College of Science and Technology, London SW7 2AZ, England **Compartmentation of synaptosomal dopamine.** Advances in Biochemical Psychopharmacology. 19:57-73, 1978.

The compartmentation of synaptosomal dopamine and its precursors, L-tyrosine and L-DOPA, is discussed. The compartment of dopamine released by the action of amphetamine appears to be distinct from (and larger than) that released by depolarizing agents. The interaction of acetylcholine and dopamine suggests that presynaptic cholinergic receptors controlling dopamine release exist on striatal nerve terminals. A model accounting for the effects of acetylcholine on dopamine release is proposed, which postulates the existence of three sites at which acetylcholine interacts on the nerve terminals: a muscarinic site, a nicotinic site, and a site influencing the effects of potassium depolarization. 54 references.

003091 Demarest, K. T.; Moore, K. E. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI 48824 **Lack of a high affinity transport system for dopamine in the median eminence and posterior pituitary.** Brain Research (Amsterdam). 171(3):545-551, 1979.

The uptake of dopamine (DA) in homogenates of the rat median eminence (which contains terminals of tuberoinfundibular nerves) was compared with DA uptake by homogenates of striatum, olfactory tubercle, and posterior pituitary (which contain terminals of nigrostriatal, mesolimbic, and tuberohypophyseal nerves, respectively). Results indicate that terminals of DA nerves in the median eminence and posterior pituitary are less able to accumulate catecholamines than are other DA containing brain regions. The lack of a high affinity transport system for DA in the median eminence and posterior pituitary may account for the relatively low concentration of dihydroxyphenylacetic acid in the median eminence, the relatively small reduction in serum prolactin concentrations after systemic administration of DA uptake blockers, and the resistance of tuberoinfundibular DA neurons to the neurotoxic effects of 6-hydroxydopamine. 20 references.

003092 Dietl, H.; Philippu, A. Institut fur Pharmakologie und Toxikologie der Universitat Wurzburg, Versbacher Lanstr. 9, D-8700 Wurzburg, Germany **Changes in the release of catecholamines in the hypothalamus induced by fall in blood pressure and drugs.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R60, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of hypotension and drugs on the release of catecholamines in the cat hypothalmus are reported. Intravenous injection of nitroprusside induced a fall in blood pressure and increased the rate of catecholamine release from the hypothalamus. Transection of the brain caudal to the hypothalamus abolished the releasing effect of the hypotension, indicating that the ehanced release of catecholamines was due to impulses from the lower brainstem. Superfusion of the hypothalamus, and this effect was also abolished by transection caudal to the hypothalamus. Stimulation of the locus coeruleus ipsilaterally or contralaterally to the superfused hypothalamus also enhanced catecholamines release. 1 reference. (Author abstract modified)

003093 Diggory, G. L.; Ceasar, P. M.; Morgan, R. M. Morgan: School of Pharmacy, Sunderland Polytechnic, Chester Rd., Sunderland, SR1 3SD, Tyne & Wear, England **The regional metabolism of 5-hydroxytryptamine in mouse brain in vitro.** Life Sciences (Oxford). 24(21):1939-1946, 1979.

The relative rates of formation of 5-hydroxytryptophol (5-HTOL) and 5-hydroxyindoleacetic acid (5-HIAA) from exogenous 5-hydroxtryptamine showed regional variations when examined in homogenates of seven separate areas of male Swiss mouse brain. The production of 5-HTOL was highest in the cerebellum and lowest in the striatum, whereas 5-HIAA productin was greatest in the hypothalamus. Addition of reduced nicotinamide adenine dinucleotide phosphate increased the formation of the alcohol catabolite in whole brain homogenates. The production of 5-HTOL decreased in the brain homogenates of mice that had been injected with phenytoin sodium or oxypertine, with the latter also producing a fall in overall 5-hydroxytryptamine metabolism. 16 references. (Author abstract)

003094 Doggrell, Sheila A. Department of Pharmacology and Clinical Pharmacology, School of Medicine, University of Auckland, Private Bag, Auckland, New Zealand **Mianserin potentiates responses to acetylcholine in the rat anococcygeus muscle.** European Journal of Pharmacology (Amsterdam). 55(3):311-314, 1979.

In male Wistar rat anococcygeus muscle, the antidepressant mianserin (1 and 10mcM) increased the magnitude of the maximal contractile responses to acetylcholine and carbamylacholine, without affecting the maximal responses to (-)-noradrena-

line. The potentiating effect of mianserin on responses to acetylcholine was maintained in the presence of 5mcM phentolamine, following 6-hydroxydopamine incubation of the tissues (1mM for 3 hours), and in the presence of 1mdM nortriptyline. It is suggested that mianserin increases the sensitivity to acetylcholine by an action at the level of, or distal to, the cholinergic receptor. 6 references. (Author abstract modified)

003095 Dum, Jane; Blasig, Julia; Meyer, Gabriele; Herz, Albert. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Opiate antagonist-receptor interaction unchanged by acute or chronic opiate treatment.** European Journal of Pharmacology (Amsterdam). 55(4):375-383, 1979.

The dose-ratio or pA2 method was used to determine receptor affinity for naloxone in naive male Sprague-Dawley rats, rats pretreated with acute or chronic morphine, and rats abruptly withdrawn from morphine. No change in the affinity of the antagonist for opiate receptors was found in the treated groups. These findings do not support theories suggesting a conformational change in opiate receptors during the development of tolerance. 20 references. (Author abstract modified)

003096 Dumitrescu, S.; Crighel, E. Department of Pharmacology, School of Medicine, 16 University Street, 6600 Jassy, Romania **Effects of streptomycin on the cortical neurons in the cat.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(2):230-236, 1979.

Topical application of streptomycin sulphate to the cat brain cortex produced cortical depression, indicated by the disappearance of spontaneous and stimulation induced activities, lack of cortical fast activity, and lack of hippocampal theta activity. Transmission toward the deep structures of neuronal activation induced by high intensity or repetitive stimuli was also abolished in some cases. The depressant effect of streptomycin resembled spreading depression, with the effect limited to the hemisphere where the drug was applied. 2 references. (Author abstract modified)

003097 Ebadi, M.; Bifano, J.; Klangkalya, B.; Govitrapong, P.; Durham, P. Dept. of Pharmacology University of Nebraska College of Medicine, 42nd Street and Dewey Avenue, Omaha, NB 68105 **Levodopa-mediated alteration in the activity of pyridoxal kinase in rat basal ganglia.** Pharmacology (Basel). 17(3):149-156, 1978.

Acute intraperitoneal administration of 400mg/kg levodopa reduced the concentration of pyridoxal phosphate and increased the activity of pyridoxal kinase in male Sprague-Dawley rat basal ganglia. Chronic oral administration of 100mg/kg/day levodopa did not alter the concentration of pyridoxal phosphate, but increased the activity of pyridoxal kinase in 7 days. However, Kinase activity returned to normal levels in 2 weeks, became reduced in 3 weeks, and returned to normal levels in 4 weeks. Results suggest that chronic intake of levodopa results in adaptive alteration in the activity of pyridoxal kinase, such that steady state concentrations of pyridoxal phosphate are maintained following the levovopa-induced enhancement of the decarboxylation reaction. 37 references. (Author abstract modified)

003098 Edelman, Arthur M.; Raese, Joachim D.; Lazar, Mitchell A.; Barchas, Jack D. Nancy Pritzker Laboratory of Behavioral Neurochemistry, Stanford University School of Medicine, Stanford, CA 94305 **In vitro phosphorylation of a purified preparation of bovine corpus striatal tyrosine hydroxylase.** Communications in Psychopharmacology. 2(6):461-465, 1978.

Tyrosine hydroxylase was purified from bovine striatum. The preparation yielded a single band upon electrophoresis under dissociating conditions in acid/urea polyacrylamide gels. Incubation of the purified enzyme with homogenous catalytic subunit of cyclic adenosine monophosphate dependent protein kinase produced an activation of tyrosine hydroxylase characterized by an increase in its affinity for reduced pteridine cofactor, with no change in maximum velocity. Similar incubations with (gamma-32P)adenosine triphosphate showed that this activation was mediated by direct phosphorylation of tyrosine hydroxylase. 21 references. (Author abstract)

003099 Elchisak, M. A.; Polinsky, R. J.; Ebert, M. H.; Modlin, L. T.; Kopin, I. J. Laboratory of Clinical Sciences, NIMH, Bethesda, MD 20014 **Kinetics of homovanillic acid and determination of its production rate in the rhesus monkey.** Life Sciences (Oxford). 24(16):1493-1501, 1979.

Homovanillic acid (HVA) labeled with two deuterium atoms (d2-HVA) was used to label the peripheral body pool of endogenous HVA (dO-HVA) in rhesus monkeys. Following i.v. injection of d2-HVA, the decline of serum d2-HVA concentration with time was multiexponential, with a biological half-life ranging from 35.9to 102 minutes. The apparent volume of distribution of d2-HVA in the body was 0.813-1.17 l/kg. Serum clearance was 7.28-18.2ml/kg/minute. For most animals, only about 50% of the administered dose of d2-HVA was recovered unchanged in the urine. Renal clearance ranged from 3.79 to 17.01/kg/minute, and d0-HVA excretion rates ranged from 19.5-64.1mcg/hour. The size of the peripheral body pool of HVA was 63.3-80.7mcg. HVA turnover was 5.43-13.9mcg/hour, and HVA production rate was 36.6-84.3mcg/hour. 13 references. (Author abstract modified)

003100 Euvrard, Catherine; Labrie, Fernand; Boissier, Jacques R. Centre de Recherche Roussel, UCLAF, 93230 Romainville, France **Effect of estrogen on changes in the activity of striatal cholinergic neurons induced by DA drugs.** Brain Research (Amsterdam). 169(1):215-220, 1979.

The effect of moxestrol, a potent estrogen, on the changes in striatal acetylcholine (ACh) levels induced by various dopamine (DA) agonists and antagonists was investigated in intact and hypophysectomized male Sprague-Dawley rats. Administration of 20mcg/kg/day moxestrol for 5 days did not alter striatal ACh levels. However, the moxestrol pretreatment reduced by about 50% the ACh accumulation induced by the DA agonists apomorphine (2.5mg/kg), 2-Br-alpha-ergocriptine (5mg/kg), and 3-(N(phenylethyl)N)propyl)amino-ethyl)phenol (2.5mg/kg). Moxestrol pretreatment also potentiated the decrease in striatal ACh induced by the DA antagonist haloperidol. Hypophysectomy completely abolished the effect of moxestrol pretreatment on the apomorphine-induced ACh increase in the striatum. Results suggest that the estrogens exert a potent antidopaminergic activity at the striatal level, which may explain clinical observations of beneficial effects of estrogens on tardive dyskinesia if induced by L-DOPA or long-term treatment with neuroleptics. 26 references.

003101 Evans, Richard Henry. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **Potentiation of the effects of GABA by pentobarbitone.** Brain Research (Amsterdam). 171(1):113-120, 1979.

Pentobarbitone (50mcM) potentiated gamma-aminobutyric acid (GABA) induced responses in rat isolated superior cervical ganglia and in dorsal or ventral root fibers of immature rat isolated spinal cords. The antagonism of GABA by bicuculline at dorsal root fibers was not reversed by pentobarbitone. Ventral root responses to GABA (but not gylcine) were also potentiated

by pentobarbitone. Racemic nipecotic acid (300mcM) potentiated responses to GABA much more than those to 3-aminopropane-sulphonic acid. 24 references. (Author abstract modified)

003102 Fando, Juan L.; Conn, Mitchell; Wasterlain, Claude G. Epilepsy Research Laboratory, Sepulveda Veterans Administration Hospital, Sepulveda, CA 91343 **Brain protein synthesis during neonatal seizures: an experimental study.** Experimental Neurology. 63(2):220-228, 1979.

Epileptic seizures induced by flurothyl or bicuculline in 4-day-old Wistar rats significantly reduced the rate of forebrain protein synthesis measured in vivo and in vitro. This inhibition abated in the postictal period, but was observed again 5-24 hours later. Seizures also inhibited forebrain and hindbrain protein synthesis in vivo in 12-day-old rats. It is suggested that inhibition of protein synthesis may partially account for the adverse effects of neonatal seizures on brain growth. 17 references. (Author abstract modified)

003103 Feger, Jean; Hammond, Constance; Rouzaire-Dubois, Beatrice. Universite Rene Descartes, Paris, France **Pharmacological properties of acetylcholine-induced excitation of subthalamic nucleus neurones.** British Journal of Pharmacology (London). 65(3):511-515, 1979.

Microiontophoretically applied acetylcholine (ACh) excited all 58 cells studied in the subthalamic nuclei (STN) of rats anesthetized with ketamine. The ACh evoked excitation was slow in onset and outlasted the ACh application. There was no sign of densitization when the ACh application was prolonged or repeated. The excitation was prolonged by concomitant application of physostigmine. Acetyl-beta-methyl choline and oxotremorine were effective cholinomimetics in the STN, but nicotine had no effect, indicating that STN ACh receptors are muscarinic. In addition, the ACh excitation was antagonized by atropine and scopolamine, but not by mecamylamine. Large microiontophoretic applications of magnesium ions did not suppress the ACh evoked excitation, suggesting that ACh acts postsynaptically. The excitatory response of STN cell to striatal or pallidal stimulation was unaffected by atropine. 14 references. (Author abstract modified)

003104 Ferrendelli, James A.; Kinscherf, Dorothy A. Department of Pharmacology, Washington University Medical School, 660 S. Euclid Avenue, St. Louis, MO 63110 **Similar effects of phenytoin and tetrodotoxin on cyclic nucleotide regulation in depolarized brain tissue.** Journal of Pharmacology and Experimental Therapeutics. 207(3):787-793, 1978.

Phenytoin inhibited the accumulations of cyclic nucleotides induced in Swiss-Webster mouse brain slices by ouabain (100mcM) or veratridine (5mcM). As little as 10-30mcM phenytoin signficantly depressed the cyclic nucleotide accumulation in depolorized brain tissue, and 100-400mcM inhibited the accumulation by more than 90%. At concentrations up to 400mcM, the drug had little or no effect on elevations of cyclic adenosine monophosphate or cyclic guanosine monophosphate caused by glutamate (10mM) or potassium ions (64mM). Tetrodotoxin also inhibited the ouabain- and veratridine-induced elevations of cyclic nucldotides in brain slices, but was three orders of magnitude more potent than phenythoin; tetrodotoxin did not inhibit the effects of glutamate or potassium ions on cyclic nucleotide regulation. Results suggest that phenytoin blocks sodium channels in excitable membranes. 33 references. (Author abstract modified)

003105 Finberg, John P. M.; Buccafusco, Jerry J.; Spector, Sydney. Buccafusco: Dept. of Physiological Chemistry and Pharmacology, Roche Institute of Molecular Biology, Nutley, NJ 07110 **Regional brain acetylcholine kinetics: effects of reserpine.** Life Sciences (Oxford). 25(2):147-155, 1979.

In a study of cholinergic/adrenergic interactions, the rate of acetylcholine (ACh) utilization was estimated in various areas of male Wistar rat brain before and after treatment with reserpine. Regional brain ACh utilization was estimated from the rate of decline in ACh content following intracerebroventricular administration of hemicholinum-3 (HC-3, 20mcg). ACh content declined exponentially in all brain areas, with maximum depletion within 30-60 minutes. The relative (descending) order of cholinergic activity in the regions studied was: hippocampus, striatum, hypothalamus, pons-medulla. Endogenous ACh was reduced by 13-18% in all regions 24 hours after injection of reserpine (5mg/kg i.p.). Reserpine did not alter the ACh utilization rate or the extent of ACh depletion after HC-3. These findings indicate that reserpine is able to deplete ACh, as well as catecholamines, from functional storage sites. 32 references. (Author abstract modified)

003106 Fleisher, L. N.; Simon, J. R.; Aprison, M. H. Applied and Theoretical Neurobiology, Institute of Psychiatric Research, Indiana University School of Medicine, Indianapolis, IN 46223 **A biochemical-behavioral model for studying serotonergic supersensitivity in brain.** Journal of Neurochemistry (Oxford). 32(6):1613-1619, 1979.

Chronic treatment with p-chlorophenylalanine methylester (PCPA) resulted in enhanced sensitivity to the inhibitory effects of D,L-5-hydroxytryptophan (5-HTP) on response rates in male Wistar rats on a variable interval 1 minute schedule of milk reinforcement. Marked depletions of 5-hydroxytryptamine (5-HT) in the cerebral cortex, hippocampus, striatum, diencephalon, mesencephalon, and pons-medulla oblongata, were found in PCPA treated rats. Smaller depletions of dopamine were seen in some areas, particularly the hippocampus and pons-medulla oblongata. Analysis of the binding of tritiated 5-HT to crude membrane fractions from the cerebral cortex of PCPA treated animals revealed a significant decrease in the apparent dissociation constant for 5-HT, but no change in the maximum binding capacity. The increased behavioral sensitivity to 5-HTP did not appear to be due to increased conversion of 5-HTP to 5-HT, increased uptake of 5-HTP, or release of 5-HT by p-chlorophenylethylamine. The possibility that PCPA or the metabolite p-chlorophenylacetic acid increased the binding of 5-HT could not be ruled out. These findings are discussed in relation to a recently proposed model of human depression. 26 references. (Author abstract modified)

003107 Flentge, F.; Van den Berg, C. J. Dept. of Biological Psychiatry, Faculty of Medicine, University of Groningen, Groningen, The Netherlands **Choline administration and acetylcholine in brain.** Journal of Neurochemistry (Oxford). 32(4):1331-1333, 1979.

In a study of the relationship between choline and acetylcholine (ACh) synthesis and metabolism in brain, choline was administered i.p. to mice and changes in brain ACh were sought. Results indicate that the administration of a large amount of choline to mice leads to an increase in choline in the brain, while ACh levels are not changed at all. Implications of these findings are discussed in relation to contradictory findings in the research literature. 20 references.

003108 Fludder, Joan M.; Leonard, B. E. Pharmacology Dept., University College, Galway, Ireland **Interaction betwen mianserin and clonidine in the rat brain in vivo.** Communiations in Psychopharmacology. 2(6):487-490, 1978.

Changes in the concentration of normetanephrine, the main extraneuronal metabolite of noradrenaline, were determined in

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the amygdaloid cortex of male Wistar rat brain following administration of mianserin and clonidine alone or in combination. Clonidine decreased the concentration of normetanephrine, and the tetracyclcic antidepressant mianserin increased the concentration of this metabolite. When given in combination, mianserin antagonized the effect of clonidine. These drug effects appear to be due to their ability to stimulate (clonidine) or block (mianserin) presynaptic alpha-adrenoceptors in this brain region. Mianserin appeared to have a greater affinity for the presynaptic alpha-adrenoceptor site than clonidine. 6 references. (Author abstract modified)

003109 Fry, J. P.; Zieglgansberger, W.; Herz, A. Department of Physiology, Medical School, University Walk, Briston, BS8 1TD, England **Specific versus non-specific actions of opioids on hippocampal neurones in the rat brain.** Brain Research (Amsterdam). 163(2):295-305, 1979.

The pharmacological specificity of the responses of hippocampal neurons in the male Sprague-Dawley rat brain to microelectrophoretically applied opioids was examined. The majority of hippocampal neurons were unaffected by morphine or enkephalin, but some displayed either inhibitory or excitatory responses; naloxone failed to antagonize, and frequently potentiated, these responses. Experiments with the stereoisomers levorphanol and dextrorphan revealed neurons which were either inhibited or excited by both enantiomers. The nonspecific, excitatory effects of enkephalin and morphine on hippocampal neurons were greatly reduced in morphine tolerant or dependent rats; the opioids had predominantly inhibitory effects in the hippocampus of these animals, which were potentiated rather than antagonized by naloxone. It is concluded that the low concentration of opiate receptors in the rat hippocampus renders neurons within the structure sensitive to a variety of nonspecific opioid actions. 33 references. (Author abstract modified)

003110 Fukumori, Ryuji; Minegishi, Akemi; Satoh, Tetsuo; Kitagawa, Haruo; Yanaura, Saizo. Satoh: Dept. of Biochemical Pharmacology, Chiba University, Yayoi-cho 1-33, Chiba 260, Japan **Effect of disulfiram on turnover of 5-hydroxytryptamine in rat brain.** Life Sciences (Oxford). 25(2):123-130, 1979.

The effect of disulfiram on 5-hydroxytryptamine (5-HT) turnover was studied in male Wistar rats. Treatment with disulfiram (200mg/kg i.p.,2 hours prior to sacrifice) caused increases in 5-HT and 5-hydroxyindoleacetic acid (5-HIAA) in brain. The activity of brain mitochondrial aldehyde dehydrogenase was reduced, but supernatant aldehyde dehydrogenase and monoamine oxidase activities were unchanged. Disulfiram had no effect on the 5-HT synthesis rate, but decreased the metabolism of 5-HT. The drug also impaired transport of 5-HIAA from brain tissue. 25 references. (Author abstract modified)

003111 Fuller, Ray W.; Hemrick, Susan K. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Inability of imipramine to protect against type A or type B monoamine oxidase inhibition by pargyline.** Research Communications in Chemical Pathology and Pharmacology. 23(2):411-414, 1979.

Imipramine (30mg/kg ip) did not antagonize the inhibition of type-A or type-B monoamine oxidase (MAO) in brain, heart, or liver of male Wistar rats. Results suggest that at doses adequate to inhibit monoamine uptake, imipramine probably does not occupy active sites on mitochondrial MAO. These findings support the contention that imipramine does not inhibit brain MAO in vivo. 5 references. (Author abstract modified)

003112 Fuller, Ray W.; Molloy, Byran B.; Hemrick, Susan K. Lilly Research Laboratories, Eli Lilly & Co., Indianapolis, IN 46206 **Inhibition in vitro of rabbit adrenal norepinephrine N-methyltransferase by 2,3,4,5-tetrahydro-1H-2-benzazepines.** Biochemical Pharmacology (Oxford) 28(4):528-530, 1979.

The inhibition, in vitro, of rabbit adrenal norepinephrine N-methyltransferase by 2,3,4,5-tetrahydro-1H-2-benezazepines was studied. Rabbit adrenal glands were purchased and norepinephrine N-methyltransferase was prepared by ammonium sulfate fractionation of the supernatant fluid after high speed centrifugation of adrenal homogenates and was assayed. Enzyme activity was assayed radiometrically with L-norepinephrine bitartrate as the methyl accepting substance and S-adenosyl-L-methionine as the methyl donor. Formation of radioactive epinephrine was measured after precipitation of the unreacted methyl donor with Reinecke salt. Inhibitors were tested at four to six concentrations, and pI50 values were determined by interpolation on a graph of percent inhibition versus inhibitor concentration. Results show that the inhibition of norepinephrine N-methyltransferase by the 7,8-dichloro compound is competitive with L-norephrine as the variable substrate. 7 references.

003113 Fuller, Ray W.; Snoddy, Harold D. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Effects of prolintane on 3,4-dihydroxyphenylacetic acid concentration in rat brain after spiperone treatment.** Pharmacology Biochemistry and Behavior. 10(4):561-563, 1979.

The effect of 1-(alpha-propylphenethyl)-pyrrolidine (prolintane) on the increase in 3,4-dihydroxyphenylacetic acid (DOPAC) in male Wistar rat brain after treatment with spiperone was determined. Prolintane, but not its 1-(alpha-methylphenethyl)-pyyrolidine analogue, markedly enhanced the increase in DOPAC concentration in the brains of the neuroleptic treated rats. Results suggest that prolintane belongs to the category of drugs including methylphenidate, cocaine, amfonelic acid, mazindol, and other indirectly acting dopaminergic drugs whose properties differ from those of amphetamine. 9 references. (Author abstract modified)

003114 Furman, B. L.; Wilson, G. A. Department of Physiology and Pharmacology, University of Strathclyde, George Street, Glasgow G1 1XW, Scotland **Effects upon plasma glucose of inhibitors of 5HT uptake and their interaction with 5-hydroxytryptophan in producing hypoglycaemia.** Journal of Pharmacy and Pharmacology (London). 30(Supplement):53P, 1978.

In a summary of a paper presented at the British Pharmaceutical Conference in Coventry, September 1978, the effects of 5-hydroxytryptophan (5HTP) on plasma glucose and the interaction between 5HTP and 5-hydroxytryptamine (5HT) uptake inhibitors in mice are reported. Chlorimipramine, fenfluramine, mazindol, and dl-8-chloro-11-antiamino-benzo-(b)-bicyclo(3.3.1)nona-3,6a(10a)diene hydrochloride each produced hypoglycemia in mice pretreated with monoamine oxidase (MAO) inhibitors and augmented the hypoglycemic effect of 5HTP, presumably by inhibiting 5HT uptake. The hypoglycemia induced by 5HTP was also inhibited by dexamphetamine, possibly via inhibition of MAO or release of 5HT. 6 references. (Author abstract modified)

003115 Furukawa, Tatsuo; Yamada, Katsushi; Kohno, Yasuko; Nagasaki, Nobuyuki. Department of Pharmacology, School of Medicine, Fukuoka University, Fukuoka 814, Japan **Brain serotonin metabolism with relation to the head twitches elicited by lithium in combination with reserpine in mice.** Pharmacology Biochemistry and Behavior. 10(4):547-549, 1979.

The combined administration of lithium chloride and reserpine to male ddY mice elicited head twitches, a decrease in 5-hydroxytryptamine (5-HT) levels, and an increase in 5-hydroxyindoleacetic (5-HIAA) levels. Pretreatment with p-chlorphenylalanine (PCPA) potentiated the head twitches elicited by lith-

ium and reserpine, induced a significant decrease in 5-HT levels and did not alter 5-HIAA levels, compared to PCPA treated controls. Results suggest that head twitches are dependent on postsynaptic 5-HT receptor sensitivity. 15 references. (Author abstract modified)

003116 Gale, K.; Moroni, F.; Kumakura, K.; Guidotti, A. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Opiate-receptors in substantia nigra: role in the regulation of striatal tyrosine hydroxylase activity.** Neuropharmacology (Oxford). 18(4):427-430, 1979.

m peptide substance P Morphine injections into the substantia nigra (SN) of rats had no effect on dopamine (DA) metabolism in striatum but blocked the haloperidol-induced activation of striatal tyrosine hydroxylase (TH). This blockade was antagonized by naltrexone, indicating the block was mediated by stimulation of opiate receptors. The binidng of tritiated enkephalinamide to opiate receptors in SN was not altered after lesion of the nigrostriatal DA pathways with 6-hydroxydopamine, but was decreased by about 70% after brain hemitransection. These results suggest that intranigral morphine prevents the haloperidol-induced activation of striatal TH by modulating the release of endogenous transmitters of modulators on DA neurons. 12 references. (Author abstract modified)

003117 Gamse, R.; Molnar, A. Institut fur Experimentelle und Klinische Pharmakologie, Universitatsplatz 4, A-8010 Graz, Austria **Substance P: capsaicin-induced, calcium-dependent release from spinal cord slices.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R68, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of capsaicin (CAP) on the release of substance P (SP) from rat hypothalamus and spinal cord are reported. CAP did not influence basal SP release from hypothalamic slices, but caused a dose dependent release of SP from spinal cord slices. The CAP-induced release of SP was significantly reduced by the addition of 0.1mM calcium and 7mM magnesium ions and was abolished by the addition of ethyleneglycol-bis-(beta-aminoethyl ether)-N,N'tetraacetic acid. Tetrodotoxin did not reduce release. Two pulses of 46mM potassium ions (K) caused two peaks of released SP, but two pulses of CAP failed to induce a second peak; this was attributed to tachyphylaxis to CAP, since a K pulse after a CAP pulse did cause a second peak. It is concluded that CAP causes calcium dependent, sodium independent release of SP from primary afferent neurons. 2 references. (Author abstract modified)

003118 George, David T.; Bailey, Paul T. United States Army Medical Research Institute of Infectious Diseases, Fort Detrick, Frederick, MD 21701 **The effect of adrenergic and ganglionic blockers upon the L-dopa-stimulated release of glucagon in the rat.** Proceedings of the Society for Experimental Biology and Medicine. 157(1):1-4, 1978.

The effect of adrenergic and ganglionic blockers upon the L-dopa stimulated release of glucagon in the rat was investigated. Phentolamine and propranolol were used to block the alpha-adrenergic receptors, respectively. In addition, dopamine was administered to determine if it would mimic the L-dopa-induced release of glucagon. Results of three studies indicate that L-dopa induces a significant release of glucagon which is detectable at high concentrations in portal plasma within 5 minutes. The data indicate that L-dopa and dopamine probably act via the sympathetic nervous system through known pathways enhancing the release of glucagon. 16 references.

003119 German, Dwight C.; Sanghera, Manjit K.; Kiser, R. Sanford; McMillen, Brian A.; Shore, Parkhurst A. Department of Physiology, University of Texas Health Science Center, Dallas, TX 75235 **Electrophysiological and biochemical responses of noadrenergic neurons to a non-amphetamine CNS stimulant.** Brain Research (Amsterdam). 166(2):331-339, 1979.

The effects of amfonelic acid (AFA) and desipramine (DMI) on the firing of locus coeruleus (LC) neurons and on whole brain norepinephrine (NE) metabolism were examined in female Sprague-Dawley rats. Both drugs decreased LC firing rate and inhibited NE uptake, without significantly altering NE metabolism. Dopamine receptor blockade with haloperidol had little effect on LC unit responsiveness to AFA. It is suggested that the AFA effects on NE neuronal firing are due to the drug's DMI-like action rather than to enhanced NE release per impulse. 24 references. (Author abstract modified)

003120 Gibson, A.; Ginsburg, M.; Hall, M.; Hart, S. L. Dept. of Pharmacology, Chelsea College, University of London, London SW3 6LX, England **The effects of opioid drugs and of lithium on steroidogenesis in rat adrenal cell suspensions.** British Journal of Pharmacology (London). 65(4):671-676, 1979.

The effects of opioid drugs, lithium, and sodium ion (NA) replacement on steroidogenesis in male Wistar rat adrenal cell suspensions were investigated. In medium containing normal Na (156mM), opioid antagonists (but not opioid agonists) reduced the steroidogenic response to the adrenocorticotrophic hormone fragment ACTH1-24 but not to dibutyryl adenosine 3',5'-monophosphate (db cyclic AMP). Replacement of 50% Na in the medium by choline had no effect on steroidogenesis, but further reductions in NA content reduced the steroidogenic activity of ACTH1-24 and of db cyclic AMP. In 50% Na medium, opioid agonists and antagonists inhibited ACTH1-24 induced steroidogenesis. Addition of therapeutic concentrations of lithium to otherwise normal medium inhibited the steroidogenic response to ACTH1-24 but not to db cyclic AMP. The selective inhibition of ACTH1-24 induced steroidogenesis by opioid drugs suggests some similarity between the opioid and ACTH receptors. The relevance of the potent inhibitory effect of lithium on steroidogenesis to its therapeutic action is discussed. 18 references. (Author abstract modified)

003121 Gibson, Gary E.; Shimada, Masahisa; Blass, John P. Dementia Research Service, Dept. of Neurology, Cornell University, Burke Rehabilitation Center, White Plains, NY 10605 **Protection by tris(hydroxymethyl)-aminomethane against behavioral and neurochemical effects of hypoxia.** Biochemical Pharmacology (Oxford). 28(6):747-750, 1979.

To investigate further the relationship between alterations in redox potentials and effects of hypoxia, the effects on hypoxic mice of agents which alter H concentrations was studied. Pretreatment of mice with the buffer tris(hydroxymethyl)aminomethane (THAM) at alkaline but not acid pH protected against effect of anemic and histotoxic hypoxia. THAM delayed the loss of the righting reflex and death in animals with anemic hypoxia (induced with NaNO2). Alkaline THAM reduced the number of animals who lost the righting reflex after the induction of histotoxic hypoxia by injection of 4mg/kg of KCN. Pretreatment with alkaline THAM also prevented the fall in acetylcholine levels and the rise in cyclic GMP induced by anemic hypoxia, and ameliorated the reduction in the synthesis of acetylcholine from labeled precursors in anemic (NaNO2 induced) hypoxia. These observations may have direct clinical relevance for the care of the large number of patients in whom brain dysfunction results from conditions in which the supply of oxygen to the brain is impaired but not abolished. 35 references. (Author abstract modified)

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003122 Gilad, G. M.; Kopin, I. J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Ornithine decarboxylase (ODC) activity in the rat superior cervical ganglion (SCG): rapid changes following axonal injury. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

The activities of ornithine decarboxylase (ODC) and tyrosine hydroxylase (TH) were determined in the superior cervical ganglion (SCG) of rats during development and after unilateral axotomy in neonatal (3-day-old) and adult (3-month-old) rats. During development, ODC was transiently elevated 2 days before birth and declined to adult levels by 3 days after birth. TH activity, however, was low at birth, increased most rapidly between 3 and 7 days after birth, and reached adult levels by 15 to 20 days. Within 6 hours after axotomy, in both neonatal and adult rats, there was a striking increase in levels of ODC. The levels of the enzyme declined by about 50% by 12 hours, remained elevated for 2 days, and decreased to normal levels by 5 days. In neonates, TH activity in SCG fell to 60% control by 1 day and remained at this level at 5 days after axotomy, but in adults, levels of the enzyme increased by about 30% 1 day after axotomy and then declined to 70% of control by 5 days and returned to normal levels by 35 days. In the presence of nerve growth factor, explants of SCG from neonates had 250% increases in ODC activity within 6 hours in vitro, but were unchanged in SCG from adults. Increased levels of ODC in SCG following axotomy or explant may be one of the initial events in the response to injury. (Author abstract modified)

003123 Gilbert, R. F. T.; Hanley, M. R.; Iversen, L. L. MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Medical School, Hills Road, Cambridge, England **(3H)-quinuclidinyl benzilate binding to muscarinic receptors in rat brain: comparison of results from intact brain slices and homogenates.** British Journal of Pharmacology (London). 65(3):451-456, 1979.

The binding of tritiated enantiomers of quinuclidinyl benzilate (QNB) to muscarinic sites in male Wistar rat brain slice and homogenate preparations was examined. Results indicate that only the (-)-enantiomer of QNB binds with high affinity to muscarinic sites. The dissociation constant value for (3H)-(-)-QNB binding in slices was eight times higher than that measured in homogenates. Similarly, the potencies of various muscarinic ligands as inhibitors of (3H)-(-)-QNB binding were consistently lower in slices than in homogenates. These results may reflect differences in the binding properties of muscarinic receptors in intact tissue slice and homogenate preparations. 14 references. (Author abstract modified)

003124 Glennon, Richard A. Dept. of Pharmaceutical Chemistry, School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298 **The effect of chirality on serotonin receptor affinity.** Life Sciences (Oxford). 24(16):1487-1492, 1979.

Studies in an isolated male Sprague-Dawley rat stomach fundus preparation indicated that alpha-methylation of phenethylamines or tryptamine had very little effect on serotonin receptor affinity. The R-isomers of 1-(2,5-dimethoxy-4-methylphenyl)-2-aminopropane (DOM) and 3,4-methylenedioxyamphetamine (MDA) and the S-isomer of alpha-methyltryptamine possessed a higher receptor affinity than did their enantiomers. Although the S()-isomer of 1-(2,5-dimethoxy-4-bromo)-2-aminopropane (DOB) possessed a lower affinity than its racemate, R(-)-DOB produced an appreciable agonistic response. 15 references. (Author abstract modified)

003125 Glossman, H.; Presek, P. Pharmakologisches Institut der JLU Giessen, Frankfurter Str. 107. D-6300 Lahn-Giessen, Germany **Alpha noradrenergic receptors in rat brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R59, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the identification of alpha-noradrenergic receptors in rat brain with tritiated clonidine is described. The receptors showed high affinity for alpha-adrenergic agonists and were modulated in vitro by a monovalent cation site, a divalent cation site, and a guanyl nucleotide site. The monovalent cation site recognized sodium, lithium, and potassium ions and was inhibitory. The divalent cation site was specific for magnesium and manganese ions and increased the affinity of the receptors for agonists by decreasing the dissociating rate constant. The stimulatory effects of magnesium ions on clonidine binding were temperature and pH dependent. The monovalent cation sites changed the binding isotherms for alpha-noradrenergic agonists when liganded with sodium; the transitions were extremely rapid, suggesting a connection between ion conductance and alpha-noradrenergic synaptic transmission in brain. The guanyl nucleotides exerted an inhibitory influence on alpha-noradrenergic agonist binding. (Author abstract modified)

003126 Glowinski, J.; Niecoullon, A.; Cheramy, A. Groupe NB, INSERM U. 114, College of France, Paris, Cedex 5, France **Regulations of the activity of nigrostriatal dopaminergic pathways by cortical, cerebellar, and sensory neuronal afferences.** Advances in Biochemical Psychopharmacology. 19:75-87, 1978.

Studies of dopamine (DA) release from dopaminergic nerve terminals and dendrites in response to sensory stimuli or to stimulation of cortical or cerebellar areas are reviewed. The extent of DA release from nerve terminals appears to be inversely correlated with the extent of dendritic transmitter release. Neuronal afferents projecting into the substantia nigra may initially control dendritic release of DA, which is then involved in the control of the activity of the dopaminergic neurons. Several mechanisms may contribute to this local regulatory process, including the interaction of DA with autoreceptors, dopaminergic receptors on some nigral afferents, or dendodendritic contacts between several dopaminergic neurons. 42 references.

003127 Gold, M. S.; Donabedian, R. K.; Redmond, D. E., Jr. Department of Psychiatry, Yale University School of Medicine, New Haven, CT **Further evidence for alpha-2 adrenergic receptor mediated inhibition of prolactin secretion: the effect of yohimbine.** Psychoneuroendocrinology (Oxford). 3(3/4):253-260, 1978.

Yohimbine was administered to nonhuman primates (M. arctoides) in doses believed to preferentially inhibit alpha-2 receptors in the brain. A dose of 2.5mg/kg of yohimbine was compared with 2.5mg/kg piperoxane and with 1 mg/kg each of yohimbine or piperoxane. The higher doses of yohimbine and piperoxane produced a rapid and significant increase in serum prolactin (PRL). None of these treatments resulted in any significant change in serum growth hormone. These data support the hypothesis that pharmacologically defined alpha-2 receptors, stimulated by clonidine, epinephrine, and norepinephrine, and inhibited by yohimbine and piperoxane, are involved in the regulation of prolactin secretion. These data are compatible with a noradrenergic mechanism which facilitates or an adrenergic mechanism which inhibits prolactin secretion. 57 references. (Author abstract)

003128 Goldberg, Leon I. Committee on Clinical Pharmacology, Department of Pharmacological and Physiological Sciences, University of Chicago, Chicago, IL 60637 **Vascular dopamine receptor as a model for other dopamine receptors.** Advances in Biochemical Psychopharmacology. 19:119-129, 1978.

Characteristics of the vascular dopamine (DA) receptor are described, and the limitations of current models of this receptor as a basis for evaluating DA receptors in other areas are discussed. Studies of the vascular DA receptor have demonstrated that the structure/activity requirements for agonists active in this receptor are extraordinarily stringent. Comparison with other DA receptors suggests that most DA receptors described in other areas are different from the vascular DA receptor or that the models used are measuring other actions of DA. 46 references. (Author abstract modified)

003129 Gorkin, Robert A.; Richelson, Elliott. Richelson: Department of Pharmacology, Mayo Foundation, Rochester, MN 55901 **Lithium ion accumulation by cultured glioma cells.** Brain Research (Amsterdam). 171(2):365-368, 1979.

The accumulation of lithium ions (Li) by rat glioma cells was examined and compared with previous findings in mouse neuroblastoma cells. Unlike neuroblastoma cells in which steady state concentrations are attained within 1 hour, glioma cells slowly accumulated Li over a period of several days, which is more consistent with the time course for clinical response to Li. At low external Li concentrations, glioma cells concentrated Li to a greater than veratridine stimulated neuroblastoma cells. Intracellular Li concentrations varied inversely with the intracellular potassium content of glioma cells and the potassium concentration of the extracellular fluid. Results indicate that glial cells, as well as neurons, may play an important role in the therapeutic action of Li. 17 references.

003130 Gottesfeld, Zehava; Jacobowitz, David M. Jacobowitz: Laboratory of Clinical Science, NIMH, Building 10, Room 2D46, Bethesda, MD 20014 **Kainic acid-induced neurotoxicity in the striatum: a histofluorescent study.** Brain Research (Amsterdam). 169(3):513-518, 1979.

Histochemical examination of catecholamine terminals in the male Sprague-Dawley rat striatum following kainic acid injections revealed a sphere of influence that contained an increased intensity of dopamine fluorescence as well as nonspecific tissue destruction at the injection site. The area involved about 50% of the striatum and varied somewhat with the site of injection. It is suggested that the destruction of regulatory neuronal systems results in a net increase of dopamine in the sphere of kainic acid influence. 29 references. (Author abstract modified)

003131 Graf, M.; Pletscher, A. Research Division, F. Hoffmann-La Roche & Co. Ltd., CH-4002 Basel, Switzerland **Shape change of blood platelets -- a model for cerebral 5-hydroxytryptamine receptors?** British Journal of Pharmacology (London). 65(4):601-608, 1979.

Tryptamine, 5-hydroxytryptamine (5-HT), quipazine, and mescaline caused a shape change in rabbit blood platelets which was inhibited by low concentrations of methysergide. The most potent antagonists of the 5-HT induced shape change included ergoline derivatives and neuroleptic drugs, which showed high stereoselectivity. Psilocine, d-lysergic acid diethylamide, and some N',N'-dimethylated tryptamines acted as mixed agonists/antagonists. The compounds found to be agonists or mixed agonists/antagonists on platelets have previously been shown to act as 5-HT agonists in the CNS. The reaction of the 5-HT receptors on platelets to 5-HT agonists differed from that of 5-HT receptors in brain areas with dense serotonergic innervatin but was similar to that of 5-HT receptors in the spinal cord, cerebral cortex, and reticular formation. It is concluded that platelets may be considered as models for some but not all 5-HT receptors in the CNS. 35 references. (Author abstract modified)

003132 Grota, Lee J. Dept. of Psychiatry, University of Rochester, 300 Crittenden Blvd., Rochester, NY 14642 **Plasma corticosterone response to serotonin altering drugs in the 3-day-old-rat.** Developmental Psychobiology. 12(4):399-405, 1979.

Three-day-old rats were injected with various neurotransmitter altering agents to demonstrate a functional relationship between these drugs and plasma corticoid levels. Plasma corticosterone levels were increased after injection of methiothepin, methysergide, and 5-hydroxytryptophan (5-HTP), but were not changed by cholinergic, adrenergic, and dopaminergic compounds. Imipramine alone had no effects on plasma corticoids, but in combination with 5-HTP resulted in a more sustained response than 5-HTP alone. Data indicate that a functional relationship between plasma corticosterone and serotonin receptors has been demonstrated in the 3-day-old rat. The presence of this relationship just after birth suggests the possibility that serotonin may be a mediator of early experience effects on later adrencortical function. 23 references. (Author abstract)

003133 Grunewald, Gary L.; Reitz, Thomas J.; Ruth, James A.; Vollmer, Sheila; Eiden, Lee E.; Rutledge, Charles O. Dept. of Medicinal Chemistry, School of Pharmacy, University of Kansas, Lawrence, KS 66045 **Inhibition of neuronal uptake of 3H-biogenic amines into rat cerebral cortex by partially and fully saturated derivatives of imipramine and desipramine: the importance of the aromatic ring in adrenergic amines -- part 3.** Biochemical Pharmacology (Oxford). 28(3):417-421, 1979.

To assess the importance if the aromatic rings in inhibition of neuronal amine uptake produced by tricyclic antidepressant drugs, derivative of imipramine (IMI) and desipramine (DMI) were prepared in which either one (IMIH, DMIH) or both (IMIH2, DMIH2) of the aromatic rings were fully reduced to cyclohexane rings. Results suggest that hydrophobic, rather than pi-electron attractive forces, are involved in the interaction of DMI or IMI with dopamine or serotonin uptake sites. However, the loss in selectivity for inhibition of norepinephrine uptake upon reduction of DMI may reflect loss of pi-electron interactions in the binding of DMI to the norepinephrine uptake site, or may reflect increased sensitivity to spatial disposition of the hydrophobic binding areas of the drug relative to that found at the dopamine or serotonin amine uptake sites. 27 references. (Author abstract modified)

003134 Guerrero-Munoz, F.; Cerreta, K. V.; Guerrero, M. L.; Way, E. Leong. Way: Department of Pharmacology, University of California, San Francisco, CA 94143 **Effect of morphine on synaptosomal Ca uptake.** Journal of Pharmacology and Experimental Therapeutics 209(1):132-136, 1979.

Morphine reduced the uptake of labeled calcium ions (45Ca) in synaptosomes from male ICR mouse brain. Similar effects were obtained after acute morphine treatment in vivo. Naloxone reversed the morphine inhibition of 45Ca uptake both in vivo and in vitro. In animals made tolerant and dependent by morphine pellet implantation, an enhancement of synaptosomal uptake of 45Ca was observed. These findings suggest that changes in Ca fluxes in synaptosomes may be involved in the analgesia, tolerance, and physical dependence induced by morphine. 28 references. (Author abstract modified)

003135 Guidotti, A.; Baraldi, M.; Schwartz, J. P.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Molecular mechanisms regulating the interactions between the benzodiazepines and GABA receptors in the central nervous system. (Unpublished paper).** Washington, DC, NIMH, 1979. 18 p.

Radioreceptors assay techniques were used to measure the kinetics of gamma-aminobutyric acid (GABA) and diazepam receptor in a study which firmly establishes a relationship between GABA and benzodiazepine receptors in membranes of

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brain and neuroblastoma NB2a clonal cell lines. Occupancy of benzodiazepine receptors uncovers a new population of GABA receptors (GABA2 receptors) endowed with high affinity for GABA. Moreover, stimulation of GABA receptors increased the affinity of 1,4-benzodiazepine receptors for 1,4-benzodiazepines. This reciprocal interaction appears to be mediated by an endogenous regulatory protein which allosterically regulates GABA2 and benzodiazepine receptors while it competitively interacts with benzodiazepine for their specific binding sites. The rank order of potency of the various 1,4-benzodiazepines to block the action of this protein inhibitor on GABA receptors is related to their capacity to displace 3H-diazepam binding. These data suggest that the interaction between 1,4-benzodiazepine receptors and the endogenous protein modulator of GABA2 receptors might play a role in the pharmacological action of the 1,4-benzodiazepines. 30 references. (Author abstract)

003136 Hahn, Henry K. J.; Barak, Anthony J.; Tuma, Dean J.; Sorrell, Michael F. Liver Study Unit, Veterans Administration Hospital, Omaha, NE 68105 **Effects of phenobarbital administration on levels of physiological antioxidants in rat liver.** Pharmacology (Basel). 17(6):341-344, 1978.

Administration of phenobarbital to male Sprague-Dawley rats over a period of 5 days increased hepatic lipid peroxidation concomitant with induction of cytochrome P-450 and cytochrome - c reductase. The increased lipid peroxidation was not due to a decreased level of antioxidants, since the fat soluble antioxidants were unchanged and the water soluble antioxidant ascorbate was elevated. The relationship of the increase in hepatic ascorbate to enhanced lipid peroxidation is discussed. 22 references. (Author abstract modified)

003137 Halaris, Angelos E.; Karbowski, Michael J. Dept. of Psychiatry, University of Chicago, Chicago, IL 60637 **Effects of tricyclic antidepressants on acetylcholine turnover and choline uptake.** Psychopharmacology Bulletin. 15(2):48-49, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the effects of tricyclic antidepressants on acetylcholine turnover and choline uptake are described. The inhibitory effects of several antidepressants on acetylcholine turnover in mouse brain are summarized, and the in vitro inhibition with these drugs of the high affinity uptake of choline into nuclei free homogenates from mouse brain is described. 10 references.

003138 Hampshire, Jennifer; Moraru, Ety; Altszuler, Norman. Department of Pharmacology, New York University School of Medicine, 550 First Avenue, New York, NY 10016 **On the mechanism of hyperglycemia and stimulation of growth hormone secretion by L-dopa.** Pharmacology (Basel). 17(3):138-148, 1978.

The mechanism of the hyperglycemic effect of L-dopa was analyzed in terms of changes in hepatic glucose production and overall glucose utilization in normal dogs. Infusion of L-dopa (20mg/kg/hour) increased glucose production, causing hyperglycemia. Plasma insulin and glucose uptake did not increase, however, suggesting a relative inhibition of glucose utilization. Pretreatment with carbidopa, a decarboxylase inhibitor, prevented the L-dopa effects. The L-dopa-induced hyperglycemia was prevented by phentolamine, but not by pimozide or propranolol. L-dopa also increased plasma growth hormone levels without affecting plasma cortisol. The effect on growth hormone was prevented by carbidopa or phentolamine but not by pimozide; propranolol potentiated the rise in growth hormone. Results suggest that the L-dopa-induced hyperglycemia is due to a peripheral action, whereas stimulation of growth hormone secretion is due to a central action of an L-dopa metabolite. 42 references. (Author abstract modified)

003139 Hancke, J. L.; Wuttke, W. Max-Planck-Institute for Biophysical Chemistry, Dept. of Neurobiology, Am Fassberg, D-3400 Gottingen-Nikolausberg, Germany **Effects of chemical lesion of the ventral noradrenergic bundle or of the medial preoptic area on preovulatory LH release in rats.** Experimental Brain Research (Berlin). 35(1):127-134, 1979.

6-Hydroxydopamine (6-OHDA) was injected into the ventral noradrenergic bundle or into the medial preoptic area in rats and the effects of such treatment on cyclic activity of hormone levels and on preoptic and hypothalamic catecholamine concentrations were studied. Slight disturbance of the cyclic estrous activity resulted for a few days. Within 1 to 4 days normal cyclic activity was resumed. Preovulatory luteinizing hormone (LH) release was substantially reduced 8 to 12 days after injection. On the basis of these and previous results it is concluded that the availability of norepinephrine in the medial preoptic area is an important factor in determining the height of the preovulatory LH surge. 32 references. (Author abstract modified)

003140 Hanke, J.; Hofeler, H.; Krieglstein, J.; Wever, K. Institut fur Pharmakologie und Toxikologie im Fachbereich Pharmazie der Philipps-Universitat, Ketzerback 63, D-3550 Marburg, Germany **The effect of centrally active drugs on the binding of hexokinase activity to mitochondria.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R62, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of antidepressants, barbiturates, neuroleptics, and other centrally active drugs on mitochrondrial hexokinase activity are reported. Chlorpromazine, perphenazine, imipramine, and desipramine enhanced the binding of hexokinase activity to rat brain mitochondria in vitro. Chlorpromazine and perphenazine had no effect on the intracellular hexokinase distribution in rat brain in vivo. A high concentration (100mcM) of chlorpromazine decreased the soluble hexokinase activity in the cortex of the isolated perfused rat brain. (R)(-)-1-methyl-5-phenyl-5-propyl-barbituric acid (100mg/kg ip) induced anethesia and an increase in the soluble hexokinase activity in the rat cortex; the (S)()-isomer of this acid caused convulsions and did not significantly alter the intracellular hexokinase distribution in vivo. Ethanol and phenytoin increased soluble hexokinase activity in rat cortex in vivo. Results indicate that the ability of a drug to solubilize mitochondrial hexokinase activity is not solely a function of its lipophilic character. 1 reference. (Author abstract modified)

003141 Harada, Masatomi; Nozaki, Yoshihisa; Maeno, Hiroo. Department of Pharmacology and Biochemistry, Central Research Laboratories, Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan **Studies on the biochemical mechanism of action of a potential antidepressant, YM-08054-1.** Neurochemical Research. 3(5):657, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The effects of a potent antidepressant, 2-(7'-indenyloxymethyl)morpholine hydrochloride (YM-08054-1), on the uptake, release, and deamination of neurotransmitters were compared with those of several tricyclic antidepressants (TADs) and viloxazine. YM-08054-1 was a strong inhibitor of 5-hydroxytryptamine (5-HT) uptake by synaptosomes from rat whole brain and of noradrenaline (NA) uptake by synaptosomes of rat hippocampus; amitriptyline had similar effects, but viloxazine and iprindole were weak inhibitors in the uptake reactions. YM-

08054-1 and amitriptyline weakly induced the release of (14C)5-HT from hypothalamic slices and of (14C)NA from hippocampal slices, in contrast to the potent releasing effects of methamphetamine and tyramine. YM-08054-1 was a weak inhibitor of type A and type B monoamine oxidase (MAO), whereas TADs preferentially inhibited the type-B MAO. Results indicate that YM-08054-1 may be a potent antidepressant that is biochemically distinct from viloxazine and structurally distinct from TADs. (Author abstract modified)

003142 Harris, R. Adron. Department of Pharmacology, University of Missouri School of Medicine, Columbia, MO 65201 **Alteration of alcohol effects by calcium and other inorganic cations.** Pharmacology Biochemistry and Behavior. 10(4):527-534, 1979.

The duration of the loss of righting reflex produced by ethanol in male Swiss-Webster mice was increased by intracerebroventricular (ivt) administration of calcium chloride or manganese chloride, but was not altered by magnesium chloride, lanthanum chloride, or verapamil. Calcium also increased t-butanol, chloral hydrate and pentobarbital sleeping times, without potentiating the hypothermic effects of these drugs. Calcium and magnesium both suppressed signs of ethanol withdrawal, but calcium was more effective. Acute administration of ethanol reduced the toxicity produced by ivt injections of ethyleneglycol-bis-(beta-aminoethyl ether) N,N'-tetraacetic acid (EGTA), a specific calcium chelator. The CNS toxicity of EGTA was increased during ethanol withdrawal. Results indicate that sedative and alcohol intoxication and withdrawal can be modulated by the availability of brain calcium and that acute and chronic ethanol treatment can alter the availability of calcium in the brain. 31 references. (Author abstract modified)

003143 Havemann, Ursula; Kuschinsky, Klaus. Max-Planck-Institute for Experimental Medicine, D-3400 Gottingen, Germany **Effect of morphine on prostaglandin E2(PGE2)-sensitive adenylate cyclase in corpus striatum of rats and its cellular localization by using kainic acid.** Brain Research (Amsterdam). 150(2):441-445, 1978.

The injection of kainic acid into Wistar rat corpus striatum was undertaken to investigate whether the prostaglandin E(PGE) induced stimulation of c-AMP synthesis and/or morphine's inhibitory effect on c-AMP synthesis are abolished. In addition, the dopamine sensitive adenylate cyclase was tested in striatal homogenates after intrastriatal kainic acid administration, being a criterion of the amount of cell body destruction in this area. Findings that intrastriatal injections of kainic acid increase the stimulation by PGE2 of adenylate cyclase in striatal slices, although somewhat unexpected, appear to exclude the possibility that a noticeable part of the PGE2 stimulated adenylate cyclase is located on cell bodies within the caudate nucleus. 23 references.

003144 Heikkila, John J.; Holbrook, Larry; Brown, Ian R. Dept. of Zoology, Scarborough College, University of Toronto, West Hill, Ontario M1C 1A4, Canada **Disaggregation of polysomes in fetal organs and maternal brain after administration of d-lysergic acid diethylamide in vivo.** Journal of Neurochemistry (Oxford). 32(6):1793-1799, 1979.

Intravenous administration of d-lysergic acid diethylamide (LSD) to pregnant New Zealand white rabbits induced a disaggregation of polysomes in fetal organs and in maternal brain. This polysome shift was not due to an activation of ribonuclease or alterations in levels of free amino acids. LSD also induced hypothermia in the adult rabbits. Pretreatment with the receptor blocking agents haloperidol and pizotyline blocked the polysome shifts and hypothermia induced by LSD. Fine dissection of adult rabbit brain revealed no marked regional variation in the extent of LSD-induced disaggregation of polysomes. 26 references. (Author abstract modified)

003145 Helke, Cinda J.; Souza, Janette Dias; Hamilton, Betty; Gillis, Richard. Dept. of Pharmacology, Georgetown University, Schools of Medicine and Dentistry, Washington, DC 20007 **No evidence for a central serotonergic mechanism in arrhythmogenic effects of deslanoside.** Nature (London). 274(5674):925, 1978.

In a correction of previously published data and conclusions based upon these data, it is noted that no evidence for a central serotonergic mechanism in arrhythmogenic effects of deslanoside exists. Errors in tables describing the effects of 5,7-dihydroxytryptamine on the 5-hydroxytryptamine concentration of the medulla/pons, hypothalamas, and colliculi of five cats are acknowledged. Continuing support for the notion of a serotonergic mechanism involved in the arrhythmogenic action of digitalis is affirmed. It is hypothesized that 5-hydroxytryptamine located in peripheral tissues and neural tissue outside the blood/brain barrier may be of importance in the arrhythmogenic action of digitalis. 2 references.

003146 Herbst, Timothy J.; Raichle, Marcus E.; Ferrendelli, James A. Dept. of Neurology and Neurological Surgery, Washington University School of Medicine, St. Louis, MO 63110 **Beta-adrenergic regulation of adenosine 3',5'-monophosphate concentration in brain microvessels.** Science. 204(4390):330-332, 1979.

The effects of neurotransmitters and vasopressin on cyclic AMP concentrations in isolated brain microvessels were examined. Norepinephrine increased the concentration of cyclic AMP in an incubated suspension of brain microvessels. This response was matched by other drugs that stimulate the beta receptors, but the alpha-adrenergic agonist phenylephrine was without effect. Beta-adrenergic blockade abolished the response while alpha-adrenergic blockade produced no change. The data support the contention that cerebral capillary function is subject to adrenergic neural control. 13 references. (Author abstract modified)

003147 Herschel, Michael; Baldessarini, Ross J. Department of Psychiatry, Harvard Medical School, Boston, MA **Evidence for two types of binding of 3H-GABA and 3H-muscimol in rat cerebral cortex and cerebellum.** Life Sciences (Oxford). 24(20):1849-1854, 1979.

The binding of tritiated gamma-aminobutyric acid (GABA) and muscimol to synaptosomal membrane preparations from different areas of male Sprague-Dawley rat brain were studied by a radioreceptor assay. The characteristics of binding suggested the presence of at least two types of binding at putative GABA receptor sites. Results also suggested that drugs such a p-chlorophenyl-GABA and valproate, which are believed to interact with GABA, probably do not have direct actions at GABA binding sites, as these agents had no effect on the binding of tritiated GABA or muscimol. 11 references. (Author abstract modified)

003148 Hietala, P.; Linden, Inge-Britt; Gronfors, Nina. Research Laboratories of Medica Ltd., P. O. B. 325, SF-00101 Helsinki 10, Finland **The effect of simultaneous administration of 3,4-dihydroxyphenylpyruvic acid and L-dopa on the bioavailability of L-dopa in rat and mouse.** Journal of Pharmacy and Pharmacology (London). 31(4):205-208, 1979.

In male Sprague-Dawley rats, the simultaneous administration of 3(3,4-dihydroxy)-L-phenylalanine (L-dopa) and the corresponding alpha-keto acid, 3,4-dihydroxyphenylpyruvic acid

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(DHPPA) resulted in significantly higher serum concentrations of L-dopa and brain concentrations of dopamine and homovanillic acid than did the same dose of L-dopa alone. DHPPA also potentiated the effect of L-dopa on locomotor activity in reserine treated male NMRI mice. It is suggested that DHPPA increases the absorption of intact L-dopa from the gut by preventing the transamination reaction between L-dopa and the physiological alpha-keto acids. 15 references. (Author abstract modified)

003149 Hirata, F.; Toyoshima, S.; Waxdel, M. J.; Axelrod, J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Phospholipid methylation: a possible biochemical event in signal transduction. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

The effect of mitogenic lectins on phospholipid methylation in murine splenic lymphocytes was examined. Binding of mitogenic doses of Con-A to cell surface acceptors of lymphocytes caused a rapid transient increase in the methylation of membrane phospholipids. Stimulation with Con-A also released labelled arachidonic acid from phospholipids, and the methylated lipids gradually decreased to control level. The apparent parallelism between the dose response curves of Con-A for phospholipid methylation and thymidine incorporation suggests that enhanced phospholipid methylation may represent an integral step in the mitogenic process. When compounds which lead to inhibition of transmethylation reactions were added to the media, there was an inhibition of phospholipid methylation but not of nucleotide methylation. The degree of inhibition in phospholipid methylation paralleled those in Ca influx, glucose uptake, and mitogenesis. The molecular mechanism of signal transduction by cells is discussed in light of these data. 3 references. (Author abstract modified)

003150 Hirata, Fusao; Axelrod, Julius; Crews, Fulton T. Laboratory of Clinical Science, NIMH, Bethesda, MD 20205 **Concanavalin A stimulates phospholipid methylation and phosphatidylserine decarboxylation in rat mast cells. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 19 p.

The effect of concanavalin-A (Con-A) on lipid methylation, phosphatidylserine metabolism, and histamine release in rat mast cells was examined. When histamine release from rat peritoneal mast cells is stimulated by Con-A, membrane phospholipids are methylated in the early stage of this process. Exogenously added phosphatidylserine enhances the Con-A induced histamine release, and at the time same time the lectin markedly stimulates the decarboxylation and methylation of phosphatidylserine. Within minutes after the addition of Con-A to rat mast cells, the newly methylated phospholipids begin to disappear, and an increased formation of lysophosphatidylcholine is observed. When rat mast cells are treated with Con-A in the absence of calcium (Ca), phospholipid methylation is stimulated, but no significant release of histamine is detected. The subsequent exposure of the pretreated cells to Ca2 causes increased release of histamine and degradation of methylated phospholipids. The inhibition of either synthesis or degradation of methylated phospholipids results in the inhibition of histamine release. These observations suggest that the synthesis and degradation of methylated lipids are an intrinsic part of the biochemical mechanism modulating histamine release from mast cells. 25 references. (Author abstract)

003151 Hirata, Fusao; Corcoran, Barbara A.; Venkatasubramanian, Krishnamoorthy; Schiffmann, Elliot; Axelrod, Julius. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Chemoattractants stimulate degradation of methylated phospholipids and release of arachidonic acid in rabbit leucocytes. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 22 p.

When rabbit peritoneal leucocytes were treated with chemoattractants such as fMet-Leu-Phe, an apparent decrease of (3H)methyl incorporation into the lipid fraction from (methyl-3H)L-methionine was observed. This decrease was a result of stimulated degradation of methylated phospholipids, but not of inhibition of their synthesis. Chemotactic peptides did not affect the metabolism of the phospholipids in which (methyl-14C)choline was incorporated. The disappearance of (3H)methyl group was associated with the release of (1-14C)arachidonic acid from the phospholipids prelabelled with these compounds. These findings suggested the activation by chemoattractants of phospholipase-A2, an enzyme that removes an unsaturated fatty acid from phospholipids. The order of potency of chemoattractants for the stimulated degradation of phospholipids was in good agreement with that for chemotaxis. Mepacrine (quinacrine) and hydrocortisone inhibited and a phorbol ester enhanced both chemotaxis and phospholipase-A2 activity. These results, taken together, suggest the close association of the metabolism of methylated phospholipids with chemotaxis in rabbit peritoneal leucocytes. 20 references. (Author abstract)

003152 Hirokawa, Nobutaka. Dept. of Anatomy, Faculty of Medicine, University of Tokyo, Hongo, Tokyo, 113, Japan **A study of the synaptogenesis in the cerebellar cortex through chronic treatment and immunocytochemistry of beta-bungarotoxin.** Journal of Comparative Neurology. 185(1):107-119, 1979.

The mechanism of synaptogenesis between dendritic spines of Purkinje cells and parallel fibers in the chicken cerebellum was studied through chronic treatment and immunocytochemistry of beta-Bungarotoxin (beta-BT). Normal cerebella from 18 day and 21 day chick embryos, incubated with beta-BT and reacted with HRP labeled antibeta-BT guinea pig inner granule cells, showed a positive HRP reaction on Purkinje cells but not on external and internal granule cells. Thus, in chicken cerebellum, beta-BT primarily affects Purkinje cells. Attention was directed to the question of whether the presynaptic specializations (presynaptic vesicular grids composed of presynaptic dense projections and associated vesicles) of the parallel fibers can differentiate in the absence of the Purkinje cells. It is suggested that parallel fibers may not be able to completely develop the presynaptic vesicular grids in the absence of their target cells. 37 references. (Author abstract modified)

003153 Hirschowitz, Basil I. Division of Gastroenterology, University of Alabama Medical Center, University Station, Birmingham, AL 35294 **H-2 histamine receptors.** Annual Review of Pharmacology and Toxicology. 19:203-244, 1979.

Evidence on which current classifications of actions of histamine into H-1 and H-2 are based, and the therapeutic applications of the H-2 antagonists are reviewed. Research on its role in the nervous system indicates that: 1) histamine may be a central neurotransmitter, and histamine systems in the brain in many respects are analogous to those involving other amines; 2) the major metabolic pathway in the brain is by histamine-N-methyl-transferase to 3-methyl-histamine an inactive analogue, and by a successive oxidative deamination by monoamine oxidase to methyl imidazole acetic acid via the aldehyde; 3) intraventricular or local injection in specific central loci causes a number of effects, and histamine both stimulates and inhibits spontaneous or evoked electrical activity of central neurons; 4) like other biogenic amines, histamine activates adenylcyclase in brain, leading to accumulation of cAMP, and it also enhances phosphorylation of proteins in brain slices. 250 references.

003154 Ho, Ing K.; Gilliland, Terri. Dept. of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, MS 39216 **Effects of acute and continuous morphine adminis-**

tration on the affinity of glutamic acid decarboxylase for pyridoxal 5'-phosphate. Biochemical Pharmacology (Oxford). 28(3):355-360, 1979.

In a study of morphine tolerance and the development of dependence, the effects of acute and continuous morphine administration on the affinity of glutamic acid decarboxylase (GAD) for its cofactor, pyridoxal 5'-phosphate (P-5'-P) were determined. Neither morphine nor naloxone had any effect on the affinity of GAD for P-5'-P. In contrast, in mice rendered tolerant to morphine by morphine pellet implantation, there was a significant attenuation in affinity of GAD for P-5'-P. Results further substantiate that the GABA system may be involved in morphine tolerance and the development of dependence. 18 references. (Author abstract modified)

003155 Hoffman, A. R.; Paul, S. M.; Axelrod, J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Catecholestrogen synthesis in rat tissues in vitro. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

The distribution of estrogen-2-hydroxylase (E2H), the enzyme which catalyzes the formation of catecholestrogens, was surveyed in a variety of rat tissues. Most of the E2H activity resided in the liver, with less activity detected in the brain. Microsomes from kidney, testis, adrenal, lung, pituitary, and heart also had E2H activity, but the ovary and the virginal uterus lacked enzyme activity. Male brain had nearly twice and male liver had at least five times the enzyme activity of the corresponding female organs. The cytochrome P450 inducers, phenobarbital and 3-methylcholanthrene, failed to alter enzyme activity in brain. Castration, however, resulted in significant decrements in liver and brain enzyme activity. In both hyperthyroidism and in hypothroidism of less than 6 weeks duration, liver but not brain E2H activity was decreased. Changes in the metabolism of estrogen in thyroid disease may help explain the postulated link between hypothyroidism and breast cancer. (Author abstract modified)

003156 Horn, Alan S. Department of Pharmacy, University of Groningen, Groningen, The Netherlands **Characteristics of neuronal dopamine uptake.** Advances in Biochemical Psychopharmacology. 19:25-34, 1978.

The biochemical and pharmacological properties of the neuronal dopamine uptake system are discussed. The system is temperature sensitive and follows Michaelis-Menten kinetics. The uptake of tritiated dopamine is dependent on the concentration of sodium and to a certain extent potassium, but does not appear to require calcium. The uptake of tritiated dopamine is potently inhibited in vitro by d-amphetamine, but is much less sensitive to inhibition by the tricyclic antidepressants. Methodological difficulties in distinguishing between a drug's ability to inhibit the uptake of tritiated dopamine and its ability to stimulate amine releases are considered, and the conformation of dopamine at its uptake site is discussed. 44 references.

003157 Horowitz, Alan J.; Schanberg, Saul M. Department of Physiology and Pharmacology, Duke University Medical Center, Durham, NC 27710 **Hormonal effects on the development of rat brain gangliosides -- I. Cortisol.** Biochemical Pharmacology (Oxford). 28(6):881-895, 1979.

Ganglioside N-acetylneuraminic acid (NANA) content and distribution and that of incorporated radionuclide from 1-(14C) glucosamine were investigated. Rats were studied under conditions of normal development and after administration of 500mg of cortisol at 1 day of age. Cortisol delayed significantly the rise in tissue concentration of NANA usually occurring between 2 and 20 days of age. The cerebellum was most severely affected and the brainstem least. The incorporation of radionuclide was depressed during the developmental lag, then increased beyond controls from 6 to 10 days, and was again below that of controls in cerebrum and brainstem at 20 days. Individual study of seven chromatographically distinct resorcinol positive compounds indicated that cortisol treatment favored accumulation and labeling of the more polar gangliosides initially, but resulted at 20 days of age in an abnormal ganglioside pattern with less polar compounds present disproportionately. 46 references. (Author abstract modified)

003158 Horowitz, Alan J.; Schanberg, Saul M. Department of Physiology and Pharmacology, Duke University Medical Center, Durham, NC 27710 **Hormonal effects on the development of rat brain gangliosides -- II. Thyroxine.** Biochemical Pharmacology (Oxford). 28(6):897-903, 1979.

The effect of thyroxine administration on rats on days 2 to 4 of life was investigated. Endogenous ganglioside levels and incorporation of radionuclide from 1-(14 C) glucosamine were determined at various ages up to 3 weeks. Thyroxine caused an initial stimulation of ganglioside development, maximal at 1 week of age, followed by a diminution in production, resulting in decreased ganglioside levels at 20 days. The brainstem was affected least and the cerebellum most severely. The ganglioside pattern at 20 days showed an abnormal preponderance of the less polar compounds. 20 references. (Author abstract modified)

003159 Hudson, R. D. Department of Pharmacology, University of Michigan Medical School, Ann Arbor, MI 48109 **Central nervous system responses to cigarette smoke inhalation in the cat.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(2):191-212, 1979.

Intact, pentobarbital anesthetized cats and unanesthetized Sherrington (gamma-driven) decerebrate cats ""smoked" (via tracheal catheter) cigarettes of varying nicotine content (0.2-2.5mg) or nicotine free lettuce cigarettes. The degree of motor reflex depression observed after smoking paralleled the nicotine content of the cigarettes smoked. Patellar reflex facilitation due to mesencephalic reticular stimulation was reduced by nicotine cigarettes and by i.v. administration of nicotine. Cigarettes containing 2.5mg nicotine or i.v. doses of 25-50mcg/kg nicotine significantly reduced rigidity and patellar reflex amplitude in the gamma-decerebrate cat. Dihydro-beta-erythrodine reduced the nicotine and cigarette smoke induced patellar reflex depression, but not the diminution in rigidity. Nicotine also suppressed pentobarbital induced EEG spindles in acutely prepared cats and produced EEG and behavioral arousal in cats with chronic deep electrodes. It is concluded that cigarette smoke produces it pharmacological effects via its nicotine content. 41 references. (Author abstract modified)

003160 Huizinga, Jan D.; Den Hertog, Adriaan. Department of Pharmacology, State University of Groningen, Bloemsingel 1, 9713 BZ Groningen, The Netherlands **The effects of enkephalins on the intramural inhibitory non-adrenergic nerve responses of smooth muscle.** European Journal of Pharmacology (Amsterdam). 54(4):389-391, 1979.

The effect of enkephalins and naloxone on the inhibitory non-adrenergic nerve responses of the taenia coli and the stomach smooth muscle cells of the guinea-pig was examined. Met-enkephalin, leu-enkephalin, and D-ala-enkephalin did not affect the muscle tension or membrane potential, measured simultaneously by the sucrose gap method. Naloxone relaxed the stomach strip, but did not modify the inhibitory junction potential. Results indicate that enkephalins are not involved in the nonadrenergic inhibitory nervous system, except possibly as neuromodulators at an interneuronal synaptic level. 8 references. (Author abstract modified)

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003161 Hutchins, D. A. Dept. of Pharmacology, School of Pharmacy, Leicester Polytechnic, Leicester LE1 9BH, England **The effect of pargyline and desmethylimipramine on monoamine concentrations and amphetamine-induced glycogenolysis in the mouse brain.** British Journal of Pharmacology (London). 65(3):489-494, 1979.

Pargyline (100mg/kg) increased the concentrations of noradrenaline (NA), dopamine (DA), and 5-hydroxytryptamine (5-HT) in mouse brain, whereas amphetamine (5mg/kg) reduced the concentration of NA and increased the concentrations of 5-HT and DA. Pretreatment with pargyline did not alter the amphetamine effects on NA and 5-HT, but reversed the effect on DA. Pargyline increased the concentration of cerebral glycogen, whereas amphetamine caused a decrease; pretreatment with pargyline did not significantly alter the amphetamine effect. Amphetamine-induced glycogenolysis was antagonized by 71% by desmethylimipramine (10mg/kg). 24 references. (Author abstact modified)

003162 Hwang, Eunyong Chung; Van Woert, M. H. Department of Neurology, Mount Sinai School of Medicine, Fifth Avenue and 100th St., New York, NY 10029 **Effect of valproic acid on serotonin metabolism.** Neuropharmacology (Oxford). 18(4):391-397, 1979.

A single injection of 400mg/kg i.p. valproic acid (2-n-propylpentanoic acid) decreased total serum tryptophan; increased free serum tryptophan, brain trypotophan, and brain 5-hydroxindoleacetic acid (5HIAA); and had no effect on brain serotonin levels in male Sprague-Dawley rats and Swiss-Webster mice. Brain tryptophan levels returned to normal in mice after chronic administration of valproic acid for 7 days, but the changes in serum tryptophan and brain 5HIAA persisted. Valproic acid potentiated the antimyoclonic action of chlorimipramine in a 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane induced animal myoclonus model. It is suggested that valproic acid may displace protein bound serum trypotophan, thereby increasing brain tryptophan (which is converted into serotonin). 30 references. (Author abstract modified)

003163 Johnson, Eugene M., Jr.; Macia, Richard A.; Andres, Roger Y.; Bradshaw, Ralph A. Department of Pharmacology, Washington University Medical School, St. Louis, MO 63110 **The effects of drugs which destroy the sympathetic nervous system on the retrograde transport of nerve growth factor.** Brain Research (Amsterdam). 171(3):461-472, 1979.

Subcutaneous administration of 100mg/kg 6-hydroxydopamine (6-OHDA) or 0.4mg/kg vinblastine 16 hours prior to administration of 125I labeled nerve growth factor (NGF) completely prevented the accumulation of retrogradely transported (125I)NGF in superior cervical ganglia of neonatal Sprague-Dawley rats. Vinblastine and 6-OHDA did not completely prevent retrograde transport of NGF in adult rats, although 6-OHDA altered the time course of NGF accumulation. Administration of 50mg/kg guanethidine produced a modest decrease in the accumulation of NGF in adult and neonatal rats, but this decrease could not account for the cytotoxic effects of guanethidine. Results suggest that 6-OHDA and vinblastine destroy sympathetic neurons in neonatal animals by completely depriving them of NGF. The lack of cytotoxicity of these drugs is consistent with their inability to block retrograde transport of NGF. The cytotoxic effects of guanethidine appear to be mediated by a different mechanism. 25 references. (Author abstract modified)

003164 Jones, R. S. G.; Roberts, M. H. T. Psychiatric Research Division, University Hospital, Saskatoon, Saskatchewan, Canada **Potentiation of responses to monoamines by antidepressants after destruction of monoamine afferents.** British Journal of Pharmacology (London). 65(3):501-510, 1979.

The effects of antidepressant drugs on responses of cortical neurons to monoamines were examined in male Wistar rats with lesions of the medial forebrain bundle (MFB). Active uptake of noradrenaline (NA) and 5-hydroxytryptamine (5-HT) by synapotosomes from the motor and somatosensory cortex was reduced to approximately 20% 10-14 days following lesion of the MFB. Following unilateral MFB lesions, excitatory responses to NA and 5-HT were observed less frequently in the cortex ipsilateral to the lesion, and depression was the predominant response. Excitatory responses on the lesioned side were significantly smaller than on the unlesioned side, but the size of depressant responses was unilatered. Viloxazine potentiated responses of cortical neurons to NA and 5-HT on both sides of the brain of lesioned rats. Desipramine potentiated responses to NA in the cortex ipsilateral to the lesion, while chlorimipramine potentiated responses to 5-HT in the ipsilateral cortex. It is concluded that antidepressants can potentiate responses to monoamines, despite a profound reduction in presynaptic terminals. 33 references. (Author abstract modified)

003165 Jones, R. S. G.; Roberts M. H. T. Psychiatric Research Division, University Hospital, University of Saskatchewan, Saskatoon, Saskatchewan, Canada **Modification of cortical neuron responses to acetylcholine by viloxazine.** Journal of Pharmacy and Pharmacology (London). 31(2):87-90, 1979.

Viloxazine, an antidepressant with no peripheral anticholinergic activity, was able to reduce and potentiate responses of male Wistar rat single cortical neurons to acetylcholine, with the reduction invariably preceding potentiation. Viloxazine could also potentiate responses to cortical neurons to monoamines, even though it has little effect on monoamine uptake. Results suggest that viloxazine has selective effects on central cholinergic receptors and may potentiate monoamine responses via a postsynaptic mechanism. 27 references. (Author abstract modified)

003166 Jordan, J. Eric; Mikiten, Terry M.; Grice, Sterling T. Veterans Administration Hospital, Jackson, MS 39216 **Varieties of barbiturate-induced suppression burst activity in the cat.** Experimental Neurology. 61(1):121-135, 1978.

Activity that appears to be analogous to human suppression burst activity was produced and studied in 11 cats. Three distinct types of activity were identified and arbitrarily labeled types A, B, and C. Each showed a regular pattern of appearance and disappearance, as well as differential susceptibility to block by barbiturate. Type A was rhythmic activity resembling barbiturate spindles appearing in the early and late stages of a suppression burst episode and was especially prominent after pentobarbital. Type B activity generally resembled ongoing background activity, except that it was periodically interrupted by brief periods of EEG suppression. Type C activity, brief plemorphic spike bursts, dominated the EEG and was seen best against a virtually isoelectric recording; it was most resistant to suppression by barbiturate and disappeared from the spontaneous EEG. It is suggested that suppression burst as ordinarily conceived is not a single EEG entity but has a substructure which deserves further study. 33 references. (Author abstract)

003167 Jurna, I.; Heinz, G. Institut fur Pharmakologie und Toxikologie. der Universitat des Saarlandes, 665 Homburg/Saar, Germany **Activity in ascending axons of the rat spinal cord evoked by A-beta, A-delta and C fibre stimulation -- specific effects of morphine and opioid analgesic agents.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R67, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of opiate analgesics on activity in ascending axons of the spinal cord of rats, evoked by electrical stimulation of A-beta, A-delta, or C fibers, are reported. Morphine (0.5mg/kg i.v.), pethidine (1mg/kg iv), and levorphanol (0.5mg/kg iv) depressed C fiber evoked activity. Higher doses were necessary to depress activity evoked by A-delta fiber stimulation. Naloxone antagonized the depressnat effect of these drugs on C fiber evoked activity. None of the drugs significantly reduced activity evoked by A-beta fibers. Dextrophan had no depressant effect. Results suggest that the three analgesic agents specifically inhibited transmission of noiceptive impulses from C fibers to ascending axons in the rat spinal cord. (Author abstract modified)

003168 Jurna, I.; Heinz, G. Pharmakologisches Institut der Universitat des Saarlandes, D-665 Homburg/Saar, Germany **Differential effects of morphine and opioid analgesics on A and C fibre-evoked activity in ascending axons of the rat spinal cord.** Brain Research (Amsterdam). 171(3):573-576, 1979.

The effects of morphine, pethidine, and levorphanol on activity in ascending axons of the spinal Wistar rat were examined. In low doses, all three analgesics produced a specific (naloxone inhibited) depression at the spinal level of impulse transmission from afferent C-fibers. Spontaneous or stimulation induced activity in axons activated from A-delta fibers was depressed specifically by a high dose of morphine or nonspecifically by high and low doses or of pethidine and levorphanol. Activity evoked by stimulation of afferent Abeta fibers was depressed only by pethidine. Dextrophanol, the stereoisomer of levorphanol, had no depressant effect on the activity evoked by stimulation of A-delta and C-fibers. The results provide indirect evidence for the inhibition by opioid analgesics of transmission of nociceptive impulses to ascending axons in the rat spinal cord. 10 references.

003169 Kadekaro, Massako; Savaki, Helen; Sokoloff, Louis. Savaki: Laboratory of Cerebral Metabolism NIMH, Bethesda, MD 20014 **Metabolic mapping of neural pathways involved in gastrosecretory response to insulin hypoglycaemia in the rat. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 39 p.

The central nervous structures involved in the gastrosecretory effect of insulin hypoglycemia were investigated in 20 urethane anaesthetized rats, previously provided with a chronic gastric fistula, by means of the 2-deoxy-D-(14C)glucose autoradiographic technique. Gastric secretion increased in animals in which plasma glucose concentration was reduced to a range of 84mg/100ml to 133mg/100ml as compared to a range of 125mg/100ml to 215mg/100ml in animals with normal gastric secretion. In 14 of 19 cerebral structures examined, the rate of glucose utilization remained constant over the range of plasma glucose concentrations of 84mg/100ml to 215mg/100ml. A significant inverse correlation between plasma glucose concentration and the rate of glucose consumption was found in the lateral nucleus of the solitary tract, dorsal nucleus of the vagus, perifornical area where fibers of the medial forebrain bundle course, the superior olivary nucleus, and the interstitial nucleus of the stria terminalis. Except for the superior olivary nucleus and the interstitial nucleus of the stria terminalis, all the structures affected by low plasma glucose concentration have previously been shown to participate in the gastrosecretory response to blockade of glucose utilization by pharmacological doses of 2-deoxy-D-glucose, indicating that these same nuclei are also activated by hypoglycaemia. 26 references. (Author abstract modified)

003170 Kaiya, Hisanobu; Iwata, Tsuyoshi; Ikeda, Kenji; Moriuchi, Iwao; Yoshimura, Tsuyoshi; Namba, Masuyuki. Department of Neuropsychiatry, Gifu University School of Medicine, Gifu, Japan **Effect of chlorpromazine on vesicle population in the monoaminergic synapse of rat caudate nucleus.** Neurochemical Research. 3(5):660, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. Two kinds of monoaminergic boutons, which accumulate alpha-methylnoradrenaline and show granular synaptic vesicles by potassium permanganate fixation, were cytochemically identified in the rat caudate nucleus. The synaptic vesicle population was unchanged or slightly decreased 3 hours after chlorpromazine administration, but was clearly increased after 24 hours. The diameter of synaptic vesicles became smaller as the number of vesicles increased, suggesting hypofunction of neural transmission. In control animals, the population of vesicles tended to fluctuate with a circadian rhythm. (Author abstract modified)

003171 Kammerer, R. Craig.; Amiri, Bahman; Cho, Arthur K. Department of Pharmacology, UCLA School of Medicine, Los Angeles, CA 90024 **Inhibition of uptake of catecholamines by benzylamine derivatives.** Journal of Medicinal Chemistry. 22(4):352-355, 1979.

Eight synthesized benzylamine analogues of bretylium (including N-(2-chloroethyl)-N-ethyl-2-methylbenzylamine (5)) were evaluated as inhibitors of accumulation of norepinephrine and dopamine in rat homogenates. For all compounds, the concentration of inhibitor that caused a 50% reduction in control accumulation was considerably lower against norepinephrine in cortex than against dopamine in striatum. High potency and high preference for inhibition of norepinephrine transport compared to dopamine transport were associated with a (2-chloroethyl) moiety, tertiary amino center, and ortho substitution of the aromatic function in the benzylamino group. (5) also inhibited the uptake of norepinephrine in rabit aorta, indicating its effect against the uptake process in general. Cocaine protected against the effects of (5) in coincubation studies when compared to the appropriate controls, indicating that (5) acts at or close to the site of action of cocaine, which is thought to be the uptake carrier site. 15 references. (Author abstract modified)

003172 Kanof, Philip D.; Greengard, Paul. Department of Pharmacology, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510 **Pharmacological properties of histamine-sensitive adenylate cyclase from mammalian brain.** Journal of Pharmacology and Experimental Therapeutics 209(1):87-96, 1979.

An adenylate cyclase that is stimulated by low concentrations of histamine and has certain properties similar to those of an H2-receptor was found in cell free preparations of the dorsal hippocampus of female Hartley guinea-pig brain. The relative potencies of histamine and the H2-receptor agonist 4-methylhistamine as activators of adenylate cyclase and the inhibition constants for histamine sensitive adenylate cyclase of H2-receptor antagonists (metiamide and cimetidine) agreed with the corresponding values for the effects of these compounds on physiological responses in peripheral H2-receptor systems. The activation of brain adenylate cyclase by histamine was also competitively inhibited by H1-receptor antagonists; promethazine was an extremely potent inhibitor, while mepyramine and chlorpheniramine were less active. Quinacrine and amodiaquine, which are known to inhibit imidazole-N-methyltransferase, also acted as competitive inhibitors of brain histamine sensitive adenylate cyclase. Results indicate that many structurally diverse compounds known to interact with various histamine binding proteins are capable of interacting with H2-receptors coupled to adenylate cyclase in brain. 49 references. (Author abstract modified)

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003173 Karler, Ralph; Sangdee, Puckprink; Turkanis, Stuart A.; Borys, Henry K. Department of Pharmacology, University of Utah College of Medicine, Salt Lake City, UT 84132 **The pharmacokinetic fate of cannabidiol and its relationship to barbiturate sleep time.** Biochemical Pharmacology (Oxford). 28(6):777-784, 1979.

The pharmacokinetics of cannabidiol (CBD) in the rat liver were studied to determine the relationship between the amount of CBD in this organ and the effect on barbituate sleep time, which has been shown by others to reflect on inhibition of drug metabolism. A methanol extract of liver was subjected to thin-layer chromatography which yielded three distinct fractions: CBD, the monohydroxylated metabolites and a relatively polar, unidentified fraction. The quantitative analysis of these fractions indicates that CBD is metabolized rapidly. In contrast, the unidentified metabolite fraction contains a substantial amount of cannabinoid throughout the course of the effect on sleep time. These data suggest that the inhibition of hepatic drug metabolism is not caused by either CBD or one of its monohydroxylated metabolites; rather, the effect correlates with the persistence of more polar metabolites. 16 references. (Author abstract modified)

003174 Karobath, M.; Placheta, P. Dept. of Biochemical Psychiatry, Psychiatr. Univ. Klinik Lazarettgasse 14, A-1090 Vienna, Austria **Pharmacological characterization of GABA-stimulated benzodiazepine receptor binding.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R62, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, specific benzodiazepine (BD) receptor binding in thawed and washed membrane fractions from rat cerebral cortex is described. Tritiated diazepam binding was stimulated by (RS)-4,5-dihydromuscimol, muscimol, and gamma-aminobutyric acid (GABA). Isoguvacine and 4,5,6,7-tetrahydroisoxazole(5,4-c)pyridine-3-ol, compounds which have strong inhibitory effects on sodium independent GABA binding, did not activate 3H-diazepam binding. Guvacine, beta-alanine, and nipecotic acid, which inhibit high affinity GABA uptake, did not affect 3H-diazepam binding. Unlike sodium independent GABA binding, GABA simultated BD binding was unmasked by freezing and thawing of the membranes and was inhibited by bicuculline methiodide. Results indicate that GABA stimulated BD receptor binding represents a novel type or different functional state of a GABA receptor, with pharmacological properties that differ from those of other GABA binding sites. 3 references. (Author abstract modified)

003175 Karras, P. J.; North, R. A. Neurophysiology Laboratory, Department of Pharmacology, Loyola University, Stritch School of Medicine, Maywood, IL 60153 **Inhibition of neuronal firing by opiates: evidence against the involvement of cyclic nucleotides.** British Journal of Pharmacology (London). 65(4):647-652, 1979.

Morphine and normorphine (10nm-1mcM) inhibited firing of single neurons of the myenteric plexus of the gunea-pig ileum. Cyclic adenosine 3',5'-monophosphate (cyclic AMP, 100mcM-1mM) also inhibited the firing of the majority of the neurons. Prostaglandin-E2 usually caused a short-lasting excitation of myenteric neurons, whereas the phosphodiesterase inhibitor 3-isobutyl-1-methylxanthine was generally without effect. The inhibition of neuronal firing by normorphine was unaffected by prior to concurrent administration of cyclic AMP, dibutyryl cyclic AMP, prostaglandin-E2, or 3-isobutyl-1-methylxanthine. Since these four treatments presumably elevated intracellular levels of cyclic AMP, the results lend no support to the notion that a reduction in intracellular cyclic AMP is essential to the inhibition of firing produced by morphine. 42 references. (Author abstract modified)

003176 Kasamatsu, Takuji; Pettigrew, John D.; Ary, Marylouise. Division of Biology, Beckman Laboratories of Behavioral Biology, California Institute of Technology, Pasadena, CA 91125 **Restoration of visual cortical plasticity by local microperfusion of norepinephrine.** Journal of Comparative Neurology. 185(1):163-181, 1979.

The effects of local microperfusion of norepinephrine (NE) on the visual cortical plasticity of kittens who have been monocularly deprived were examined. Using a newly developed technique of continuous microperfusion, evidence was obtained in support of the hypothesis that the neocortical catecholamines, particularly norepinephrine, are responsible for a high level of plasticity. The effect of NE perfusion was seen both in kittens which had received prior 6-hydroxydopamine treatment as well as in older animals which had outgrown the susceptible period. In the kittens, a nearly complete shift in ocular dominance toward the open eye was obtained, and in the older animals a decrease in binocularity was obtained. It is concluded that these results support the view that NE plays an important role in cortical plasticity. 38 references. (Author abstract modified)

003177 Kasamatsu, Takuji; Pettigrew, John D. Division of Biology, Beckman Laboratories of Behavioral Biology 216-76, California Institute of Technology, Pasadena, CA 91125 **Preservation of binocularity after monocular deprivation in the striate cortex of kittens treated with 6-hydroxydopamine.** Journal of Comparative Neurology. 185(1):139-161, 1979.

The effects of monocular deprivation and injections of 6-hydroxydopamine (6-OHDA) to deplete brain catecholamines on the striate cortex of kittens were examined. The visual cortices of all catecholamine depleted kittens showed high proportions of binocular neurons, in contrast to the control group, a majority of whose visual cortical neurons were driven exclusively by the nondeprived eye. Preservation of binocularity in 6-OHDA treated kittens was dose related. There was some indication that the drug's effect in preventing an ocular dominance shift disappears by 6 weeks following cessation of 6-OHDA treatment. It is concluded that the data support the hypothesis that catecholamines are required for the maintenance of visual cortical plasticity during the critical period. 73 references. (Author abstract modified)

003178 Kazda, S.; Hoffmeister, F. Institute of Pharmacology, BAYER AG, Postfach 101709, D-5600 Wuppertal 1, Germany **Effect of some cerebral vasodilators on the postischaemic impaired cerebral reperfusion in cats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R43, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of cerebral vasodilating drugs on the postischemic impaired cerebral reperfusion in cats are reported. Pretreatment with papaverine, maxaverine, cinnarizine, isoxsuprine, or vincamine prolonged the reactive hyperemia, but did not influence the postischemic vasospasm and survival of the cats. After nimodipine, however, the course of the cerebral perfusion was normal and 90% of the animals survived more than 24 hours after ischemia. Since the fatal postischemic reduction of cerebral blood flow is due to an arterial spasm produced by an increase of calcium influx into the ischemic depolarized vascular smooth muscle, it is suggested that the protective effect of nimodipine is due to its potent calcium antagonistic properties in cerebral vessels. 1 reference. (Author abstract modified)

003179 Kebabian, John W. Experimental Therapeutics Branch, NINCDS, NIH, Bethesda, MD 20014 **Dopamine-sensitive adeny-**

lyl cyclase: a receptor mechanism for dopamine. Advances in Biochemical Psychopharmacology. 19:131-154, 1978.

The properties of the dopamine receptors that regulate adenylyl cyclase are discussed, including their gross anatomical and cellular location and ontogenetic development. Dopamine causes an accumulation of cyclic adenosine 3',5'-monophosphate (AMP) in a variety of mammalian tissues as a result of its ability to stimulate adenylyl cyclase activity. The properties of the dopamine receptor that regulates adenylyl cyclase activity are similar to those of the dopamine receptors that have been indirectly characterized in biochemical and behavioral experiments. The dopamine stimulated adenylyl cyclase in discrete anatomical subdivisions of the mammalian brain provides a physiologically relevant postsynaptic receptor mechanism for dopamine, but the physiological consequences of dopamine stimulated cyclic AMP accumulation have not been identified. Dopamine receptors that are not associated with adenylyl cyclase activity, such as the dopaminergic autoreceptors on the nigroneostriatal neurons, have also been found. Moreover, studies with lergotrile and other ergots suggest that some postsynaptic dopamine receptors may not regulate adenylyl cyclase. 79 references. (Author abstract modified)

003180 Kebabian, P. R.; Kababian, J. W.; Carpenter, D. O. Neurobiology Department, Armed Forces Radiobiology Research Institute, Bethesda, MD 20014 **Regulation of cyclic AMP in heart and gill of Aplysia by the putative neurotransmitters dopamine and serotonin.** Life Sciences (Oxford). 24(19):1757-1764, 1979.

Serotonin and dopamine (DA) stimulated cyclic adenosine 3',5'-monophosphate (CAMP) production in slices of Aplysia californica gill. Serotonin also increased cAMP in slices of Aplysia heart, but DA had no effect. Several lines of evidence indicate that the receptors for DA and serotonin are distinct entities, but no drugs were found to block one receptor without affecting the other. 20 references. (Author abstract modified)

003181 Kendrick, K. M.; Drewett, R. F. Department of Psychology, University of Durham, Durham, England **Testosterone reduces refractory period of stria terminalis neurons in the rat brain.** Science. 204(4395):877-879, 1979.

The effect of testosterone on the refractory period of an electrophysiologically defined group of neurons in rat brain was studied. The absolute refractory period of neurons projecting from the corticomedial amygdala to the medial preoptic anterior hypothalamic junction in male Wistar rats was significantly increased by castration (from 1.01 to 1.61 milliseconds) and decreased again by testosterone (from 1.48 to 0.97 millisecond). Corticomedial amygdala neurons which projected to the capsule of the ventromedial nucleus of the hypothalamus were unaffected. These results demonstrate a specific, direct neuronal effect of testosterone. 14 references. (Author abstract modified)

003182 Kerwin, Robert W.; Pycock, Christopher J. Department of Pharmacology, Medical School, University of Bristol, Bristol, BS8 1TD, England **Specific stimulating effect of glycine on 3H-dopamine efflux from substantia nigra slices of the rat.** European Journal of Pharmacology (Amsterdam). 54(1/2):93-98, 1979.

The effects of glycine on the efflux of tritium labeled dopamine (DA), 5-hydroxytryptamine (5-HT), and gamma-aminobutyric acid (GABA) from small slices of female Porton rat substantia nigra were examined. A depolarizing stimulus (50mM potassium chloride) stimulated the efflux of 3H-5HT, 3H-DA, and 3H-GABA in a calcium dependent fashion. Glycine (50 and 100mcM) stimulated the spontaneous efflux of 3H-DA, but not that of 3H-5HT or 3H-GABA. Taurine, GABA, and beta-alanine (100mcM) had no effect on release of radioactivity from nigral slices prelabeled with 3H-DA. Tritiated glycine was taken up by the slices by both high and low affinity systems. Potassium-induced depolarization had no effect on the efflux of radioactivity from nigral slices prelabeled with 3H-glycine. 18 references. (Author abstract modified)

003183 Kim, Jin-Soo. Department of Neurology, University of Ulm, D-7959 Schwendi, Germany **Transmitters for the afferent and efferent systems of the neostriatum and their possible interactions.** Advances in Biochemical Psychopharmacology. 19:217-233, 1978.

The afferent and efferent transmitter pathways of the striatum and their possible interactions are discussed. Surgical denervation studies demonstrated the existence of a high glutamic acid containing corticostriatal connection and a cholinergic thalamostriatal projection, in addition to the well known nigrostriatal dopaminergic pathway. Gamma-aminobutyric acid (GABA) appeared to be the transmitter for the strionigral and striopallidal efferent systems. No evidence of strionigral or striopallidal cholinergic pathways was found. Studies with 6-hydroxydopamine (6-OHDA) suggest that 6-OHDA affects cholinergic as well as dopaminergic neurons in the striatum, suggesting interaction of the two systems. GABA also appears to interact with dopamine and may mediate dopamine metabolism in the striatum. 78 references. (Author abstract modified)

003184 Klemm, Nikolai, Murrin, L. Charles; Kuhar, Michael J. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Neuroleptic and dopamine receptors: autoradiographic localization of (3H)spiperone in rat brain.** Brain Research (Amsterdam). 169(1):1-9, 1979.

Male Sprague-Dawley rat brains were processed for light microscopic autoradiography 2 hours after injection of tritiated spiperone into the tail vein. High densities of autoradiographic grains were found in all areas known to have dopaminergic innervation, including the olfactory tubercles, nucleus accumbens, nucleus caudate putamen, lateral septum, zona incerta, nucleus subthalamicus, arcuate nucleus, nucleus of the central amygdala, areas in the ventral tegmentum, and the claustrum. Increased autoradiographic grain densities were also seen in the midbrain and frontal cortex, indicating that binding occurred in neurotransmitter receptors other than dopamine receptors. 35 references. (Author abstract modified)

003185 Klemm, W. R.; Mallari, C. G. Department of Biology, Texas A&M University, College Station, TX 77843 **Morphine and naloxone effects on olfactory evoked electrographic activity in the amygdala.** Archives Internationales de Psychodynamie et de Therapie (Ghent). 237(2):237-250, 1979.

The effects of morphine and naloxone on responses of the Wistar rat amygdala, caudate, and central gray to electrical stimulation of the olfactory bulb were examined. Stimulation evoked clear EEG responses in the amygdala and sometimes in the other areas. Morphine (15mg/kg i.p.)depressed the amygdala responses in some rats, but enhanced it in others. Naloxone (1mg/kg i.p.)generally reversed both effects. Stimulation also caused excitatory unit impluse responses in the amygdala, and morphine increased the magnitude of the stimulus evoked excitation; naloxone reversed this enhancement. In control rats, naloxone often decreased the amygdala evoked response. Stimulus evoked increases in unit activity in the caudate and central gray were depressed by morphine, but naloxone had no consistent antagonistic effect. Results indicate that morphine excites or disinhibits certain neurons associated with the olfactory/amygdala pathway. The possibility that this pathway contains endorphin-

ergic elements is discussed. 22 references. (Author abstract modified)

003186 Knight, Martha; Klee, Werner A. Laboratory of General and Comparative Biochemistry, NIMH, Bethesda, MD 20014 **Enkephalin generating activity of rat brain. (Unpublished paper).** Bethesda, MD, NIMH, 1979, 1 p.

A convenient assay was developed that measures the cleavage of the labeled nonapeptide (14C HomoArg69)beta-Lipotropin into enkephalin and labeled tetrapeptide. In the assay, the substrate is adsorbed to dextran coated charcoal and the unadsorbed radioactivity is shown to be due to tetrapeptide. The pH optimum of the activity is about pH-7. High levels of soluble enzyme activity are found in the cerebellum and striatum whereas the striatum, hippocampus, and midbrain have the highest membrane bound activity. The distribution of the membrane activity corresponds more closely to the localization of enkephalin and other neuropeptides. The enzyme is inhibited by p-chloromercuribenzoate and DTNB which indicates that the endopeptidase is a thiol protease. A number of peptides also inhibit the enzymes indicating that the specificity is not absolute for endorphins. (Author abstract modified)

003187 Korczyn, Amos D.; Boyman, Ruth; Shifter, Lia. Department of Physiology and Pharmacology, Sackler School of Medicine, Tel Aviv University, Ramat Aviv, Israel **Morphine mydriasis in mice.** Life Sciences (Oxford). 24(18):1667-1673, 1979.

Morphine produced a dose dependent mydriasis in ICR mice, which was not dependent on the integrity of the sympathetic system. Interferences with central catecholamines or serotonin also failed to abolish the response. Ro4-1284, a neurotransmitter depletor, caused miosis and completely inhibited the mydriatic effect of morphine. The effects of Ro4-1284 appear to be related to depletion of histamine or gamma-aminobutyric acid. 15 references. (Author abstract modified)

003188 Koss, Michael C. Department of Pharmacology, University of Oklahoma Health Sciences Center, P. O. Box 26901, Oklahoma City, OK 73190 **Topical clonidine produces mydriasis by a central nervous system action.** European Journal of Pharmacology (Amsterdam). 55(3):305-310, 1979.

One drop of clonidine solution (0.125, 0.25, 0.5%) was administered topically to one eye in anesthetized cats in which the vagosympathetic nerve trunk had been severed at the cervical level. Clonidine caused a simultaneous dose related mydriasis in both eyes, along with a decrease in heartrate. The peak effects were observed in about 20-30 minutes. Topical administration of 0.5% clonidine produced no effect on the parasympathetomized, eserinized iris, but did dilate the opposite pupil; epinephrine (0.1-30mcg) produced equal pupillary dilation in both eyes. Topical clonidine also caused a dramatic increase in postganglionic ciliary nerve activity. All the clonidine effects were antagonized by 0.5mg/kg i.v. hohimbine. Results indicate that topical clonidine causes mydriastis in the cat and that this effect is mediated totally by means of CNS inhibition of parasympathetic tone to the iris. 23 references. (Author abstract)

003189 Kozniewska, E.; Skolasinska, K. Isotope Laboratory, Institute of Physiology, School of Medicine, Warsaw, Poland **Impairment of cerebral blood flow autoregulation after hypertonic urea administration.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(1):110-118, 1979.

The effects of unilateral intracarotid administration of 3M urea on resting cerebral blood flow, arterial blood pressure, perfusion pressure/cerebral blood flow relation, electrocorticogram (ECoG), and Evans blue permeability was tested in dogs. Hypertonic urea had no effect on ECoG, but temporarily enhanced arterial blood pressure. Cerebral blood flow was not affected 10 minutes after the urea injection. Extravasation of Evans blue was observed in the urea perfused hemisphere for about 40 minutes after urea administration. Plots of the cerebral perfusion pressure/blood flow relation obtained 1 hour after treatment, when the blood/brain barrier to protein was restored revealed loss of the normal autoregulatory response in the treated hemisphere. 14 references. (Author abstract modified)

003190 Krynock, Glenn M.; Rosecrans, John A. Dept. of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **Morphine as a discriminative stimulus: role of periaqueductal gray neurons.** Research Communications in Chemical Pathology and Pharmacology. 23(1):49-60, 1979.

The degree of involvement of the periaqueductal gray (PAG) in the mediation of the discriminative stimulus (DS) effects of morphine sulfate was investigated in 11 rats trained to discriminate morphine sulfate from saline using a two bar operant procedure. The highest intraPAG morphine sulfate dose elicited significantly more correct responding than did either systemic or the intracerebral injection of saline, while not differing from systemically administered morphine. Results suggest that the PAG may at least be partially responsible for the generation of morphine's DS effect when administered s.c. 23 references. (Author abstract modified)

003191 Kummer, P.; Steinbrenner, J.; Stumpf, H.; Stock, G. I.Physiologisches Institut der Universitat Heidelberg, Im Neuenheimer Feld 326, D-6900 Heidelberg, Germany **The effect of picrotoxin on the nigro-striatal dopamine system.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R63, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of gamma-hydroxybutyric acid (GHBA) and the gamma-aminobutyric acid antagonist picrotoxin on nigrostriatal dopamine (DA) in rats are reported. Picrotoxin (3 and 5mg/kg i.p.)induced convulsion and increased the DA synthesis rate, without altering the normal DA content in the neostriatum. Picrotoxin also abolished the increase in DA levels normally seen after GHBA (1.2or 1.5g/kg i.p.). Intranigral but not intrastriatal injections of picrotoxin significantly reduced the DA level and the rate of DA synthesis seen after injections of GHBA or gamma-butyrolactone (GBL), 750 and 500mg/kg i.p..Intranigral injections of picrotoxin also induced contralateral turning in 75% of the animals tested and ipsilateral turning in 25% of the animal. The effect of picrotoxin appeared to be specific, since pentylenetetrazol in doses sufficient to produce convulsions (45mg/kg i.p.)did not counteract the effects of GHBA and GBL on DA mechanisms. (Author abstract modified)

003192 Laubscher, Andreas; Pletscher, Alfred. Dept. of Research, University Clinics, Cantonal Hospital, Hebelstrasse 20, CH-4031, Basel, Switzerland **Shape change and uptake of 5-hydroxytryptamine in human blood platelets: action of neuropsychotropic drugs.** Life Sciences (Oxford). 24(20):1833-1840, 1979.

Psychotropic drugs acted as agonists, antagonists, or mixed agonists/antagonists of the shape change mediated by the 5-hydroxytryptamine (5-HT) receptor in human blood platelets incubated in protein poor medium. Some drugs were equally potent in reserpinized and in normal platelets, while others showed differential effects. There was no correlation between the potencies of the drugs as shape change inhibitors and as uptake inhibitors. It is concluded that human platelets may serve as models for the neuronal 5-HT receptors of some areas of the CNS and to determine the subcellular site of action of 5-HT uptake inhibitors.

The receptors responsible for the shape change appear to be distinct from the sites of 5-HT transport at the plasma membrane. 11 references. (Author abstract modified)

003193 Lavielle, Solange; Tassin, Jean-Pol; Thierry, Anne-Marie; Blanc, Gerard; Herve, Denis; Barthelemy, Catherine; Glowinski, Jacques. Group NB, INSERM U.114, College de France, 11, place Marcelin Berthelot, F-75231 Paris Cedex 5, France **Blockade by benzodiazepines of the selective high increase in dopamine turnover induced by stress in mesocortical dopaminergic neurons of the rat.** Brain Research (Amsterdam). 168(3):585-594, 1979.

The effects of electrical footshock stress on the activity of ascending dopaminergic neurons were estimated in male Sprague-Dawley rats by measuring changes in dihydroxyphenylacetic acid (DOPAC) and dopamine (DA) levels in discrete brain areas. At the end of a 20 minute stress, DOPAC levels were increased and DA levels were decreased in the frontal cortex. After a stress of only 3-10 minutes, only a reduction in DA levels was observed. Mesocortical dopaminergic neurons were selectively activated under stress, since the DOPAC/DA ratio was increased in the frontal and cingular cortices, but not in limbic structures (septum, amygdala, and nucleus accumbens) or in the striatum. Pretreatment with 5mg/kg i.p. diazepam or 10mg/kg i.p. chlordiazepoxide prevented the increase in the DOPAC/DA ratio in the frontal cortex of rats subjected to 20 minute stress. 36 references. (Author abstract modified)

003194 Lee, C. M.; Arregui, A.; Iversen, L. L. MRC Neurochemical Pharmacology Unit, Medical School, Cambridge CB2 2QD, England **Substance P degradation by rat brain peptidases: inhibition by SQ 20881.** Biochemical Pharmacology. 28(4):553-556, 1979.

Substance-P (SP) degradation by rat brain peptidases was studied. Brains of adult, male Sprague-Dawley rats were homogenized in 20 vol of 0.32 M sucrose. Subcellular fractions were prepared by differential centrifugation to yield P1, P2, and P3 pellets, and a postmicrosomal supernatant fraction. The assay involved measuring the disappearance of exogenous SP immunoreactivity by a radioimmunoassay procedure, with a lower sensitivity limit of 0.01 pmol of SP. Results reveal a predominant localization of SP degrading enzyme (SPDE) activity in the supernatant fraction of rat brain homogenates. An appreciable amount of SPDE activity was found in the washed P2 fraction. SPDE activity is independent of chloride ions since its activity in the presence of 150mM Cl did not differ from that in the absence of Cl. Subsequent experiments compared the actions of various potential inhibitors of SPDE in the supernatant and P2 fractions. Results show that SQ 20881 and SQ 14225 inhibit SPDE as well as enkephalin degradation. It is shown that benzamidine, 1,10-phenathroline, EDTA, and puromycin are completely ineffective in preventing the breakdown of SP. 10 references.

003195 Leslie, Frances M.; Kosterlitz, Hans W. Unit for Research on Addictive Drugs, University of Aberdeen, Marischal College, Aberdeen, AB9 1AS, England **Comparison of binding of (3H)-methionine-enkephalin, (3H)-naltrexone and (3H)-dihydromorphine in the mouse vas deferens and the myenteric plexus and brain of the guinea pig.** European Journal of Pharmacology (Amsterdam). 56(4):379-383, 1979.

Specific binding of tritiated methionine-enkephalin to dihydromorphine was demonstrated in homogenates of guinea pig brain and myenteric plexus and mouse vas deferens. The ratio of methionine enkephalin to dihydromorphine binding favored methionine-enkephalin binding in the brain and deferens showed an intermediate ratio. 8 references. (Author abstract dihydromorphine binding in the myenteric plexus. The mouse vas modified)

003196 Leuschner, F.; Neumann, W.; Doppelfeld, I. S.; Erdos, A.; Fontaine, R.; Gabbar, H. A.; Graf, E. Graf: Dept. of Pharmacology, A. Nattermann & Cie GmbH, HA Pharmakologie, Nattermannallee 1, D-5000 Cologne 30, Germany **General pharmacology of amitriptylinoxide.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1883-1893, 1978.

General pharmacological properties of the tricyclic antidepressant amitriptylinoxide, which is a metabolite of amitriptyline, were studied. Synergistic action with sympathetic neurotransmitters was observed. Effects registered in animal tests laid out to reflect central anticholinergic action yielded no decisive differences between amitriptylinoxide and amitriptyline. Peripheral anticholinergic action, however, was found to be considerably weaker after amitriptylinoxide than after amitriptyline. Tests in the anesthetised dog served to establish the threshold dose causing cardiovascular impairment. Also, further pharmacologic screening supplied evidence for a certain antihistamine, antiserotonin, and musculotropic spasmolytic activity. It is concluded that simultaneous consideration of neuropharmacological data and the results obtained in general pharmacology assessment point to a certain superiority of amitriptylinoxide over other tricyclic antidepressants. 26 references. (Author abstract modified)

003197 Lew, Jow Y.; Goldstein, Menek. New York University Medical Center, Dept. of Psychiatry, Neurochemistry Laboratories, 550 First Avenue, New York, NY 10016 **Dopamine receptor binding for agonists and antagonists in thermal exposed membranes.** European Journal of Pharmacology (Amsterdam). 55(4):429-430, 1979.

To determine whether dopamine (DA) receptors with high affinity for DA agonists have different physicochemical properties than those with a high affinity for DA antagonists, the thermal stability of DA receptors in bovine striatal membranes was examined. Exposure of striatal membranes to 53 degrees C for 2 minutes resulted in a decrease of the specific binding of tritiated spiroperidol by 5-10%, while the specific binding of tritiated DA was decreased by 80-90%. The potencies of DA agonists in displacing tritiated spiroperidol were significantly reduced-in the thermal exposed membranes, but the potencies of DA antagonists were not altered. Thus, thermal exposure produced a loss of DA receptors with high affinity for DA agonists but did not significantly affect DA receptors with high affinity for antagonists. These findings suggest that DA receptors with affinity for agonists and antagonists constitute two distinct molecular entities, one thermal stable and one labile. 4 references.

003198 Lindvall, Olle; Bjorklund, Anders. Department of Histology, Biskopsgatan 5, S-223 62 Lund, Sweden **Anatomy of the dopaminergic neuron systems in the rat brain.** Advances in Biochemical Psychopharmacology. 19:1-23, 1978.

Data on the organization of central dopaminergic neurons in rat brain are summarized. The mesotelencephalic, mesostriatal, mesocortical, periventricular, tuberohypophyseal, incertohypothalamic, periglomerular, and retinal dopamine systems are described. Data obtained with the glyoxylic acid fluorescence method are emphasized, but results obtained with immunohistochemistry, horseradish peroxidase tracing, and other methods are also included. 102 references.

003199 List, Stephen J.; Seeman, Philip. Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada M5S 1A8 **Dopamine agonists reverse the elevated 3H-neuroleptic binding in neuroleptic-pretreated rats.** Life Sciences (Oxford). 24(16):1447-1452, 1979.

Chronic administration of large doses of haloperidol (10mg/kg/day for 21 days) resulted in a 37-45% increase in the specific binding of tritiated spiperone and a 28% increase in the specific binding of tritiated apomorphine in male Wistar rat striatal homogenates. The increase in 3H-spiperone binding in neuroleptic pretreated rats was reversed by 5 day administration of bromocriptine (35mg/kg) or of L-DOPA (200mg/kg) plus carbidopa (20mg/kg). Treatment of normal rats for 5 days with L-DOPA or bromocriptine had no effect on 3H-spiperone binding. Results-indicate that dopamine agonists can reverse the neuroleptic induced elevation of brain neuroleptic binding. It is suggested that short-term, high dose therapy with dopamine agonists may be clinically useful in alleviating neuroleptic-induced tardive dyskinesia. 31 references. (Author abstract modified)

003200 Loo, Y. H.; Fulton, T.; Wisniewski, H. M. New York State Institute for Basic Research in Mental Retardation, Staten Island, NY 10314 **Vulnerability of the immature brain to phenylacetate intoxication: tissue permeability to phenylacetate.** Journal of Neurochemistry (Oxford). 32(6):1697-1698, 1979.

In Sprague-Dawley rats, phenylacetate readily penetrated into the brain, eyes, heart, kidney, and liver. One hour after subcutaneous injection of sodium phenylacetate into rats from 1-65 days of age, the ratios of the concentrations (mcM/g) in blood/tissue were approximately 1:1 in all these tissues except the brain. The blood/brain ratio changed from 1:1 in 1-7-day-old rats to the adult ratio of 2:1 at 21 days of age. The free access of phenylacetate into the immature brain is discussed in relation to phenylketonuria, a metabolic disease in which excessive amounts of phenylacetate are produced in peripheral tissues. 6 references. (Author abstract modified)

003201 Loonen, A. J. M.; Soudijn, W. Department of Pharmaceutical Chemistry, University of Amsterdam, Plantage Muidergracht 24, Amsterdam, The Netherlands **Effects of halopemide, a new psychotropic agent, on the uptake of serotonin by blood platelets.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(2):267-274, 1979.

The effects of halopemide, a new pschotropic agent, and its putative metabolites on the uptake of 14C-labeled 5-hydroxytryptamine (5-HT) into human and male Wistar rat blood platelets were examined. Halopemide its putative metabolites 1-(4-piperidinyl)-5chloro-1,3-dihydro-2H-benzimidazo-2-one and 1-(1-(2-aminoethyl) -4-piperidinyl)-5-chloro-1,3-dihydro-2H-benzimidazol-2-one, and sulpiride inhibited the uptake of 5-HT in a dose dependent manner, but these compounds were less active than imipramine. Clozapine and p-fluorohippuric acid, another putative metabolite of halopemide, were totally devoid of activity. 22 references. (Author abstract modified)

003202 Lundberg, Dag; Breese, George R.; Mueller, Robert A. Department of Anesthesiology, University of North Carolina School of Medicine, NCMH 204 H, Chapel Hill, NC 27514 **Dopaminergic interaction with the respiratory control system in the rat.** European Journal of Pharmacology (Amsterdam). 54(1/2):153-159, 1979.

Apomorphine given to male Sprague-Dawley rats lightly anesthetized with halothane produced a dose dependent increase in respiratory frequency and minute ventilation. Basal arterial carbon dioxide (CO2) tensions were not significantly altered by apomorphine, but the mechanical response to exogenous CO2 exposure was greatly increased in rats given apomorphine. Haloperidol returned the apomorphine stimulated respiratory pattern to control values. It is concluded that dopamine neurons may have important interactions with respiratory control. 12 references. (Author abstract)

003203 Lutold, Benno E.; Karoum, Farouk; Neff, Norton H. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Activation of rat sympathetic ganglia SIF cell dopamine metabolism by muscarinic agonists.** European Journal of Pharmacology (Amsterdam). 54(1/2):21-26, 1979.

The biochemical responsiveness of the dopamine (DA) containing small intensely fluorescent (SIF) cells to cholinoceptive drugs was evaluated in male Sprague-Dawley rat superior cervical ganglia (SCG), middle inferior cervical ganglia, and celiac ganglia. The major DA metabolite in all ganglia was 3,4-dihydroxyphenylacetic acid (DOPAC). Stimulation of muscarinic receptors with carbachol induced a 3-10 fold increase of DOPAC concentration in the ganglia, with the celiac ganglion being the most responsive and the SCG the least responsive. Pretreatment with atropine blocked the rise of DOPAC. It is concluded that DA metabolism in SIF cells is enhanced by stimulation of muscarinic receptors, and that the magnitude of the DOPAC increase in a ganglion may reflect the importance of DA in ganglionic transmission. 13 references. (Author abstract modified)

003204 Lyness, William H.; Brezenoff, Henry E.; Mycek, Mary J. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **Cross-tolerance to centrally injected barbiturates.** European Journal of Pharmacology (Amsterdam). 54(4):319-330, 1979.

Hypnotic responses to intracerebroventricular (i.c.v.)injections of barbital, pentobarbital, R(-)-mephobarbital, S()-mephobarbital, and racemic metharbital were compared to those produced by phenobarbital. Dose/response relationships were obtained for all except S()-mephobarbital and metharbital. Chronic i.c.v. phenobarbital administration resulted in tolerance to the drug's hypnotic effects. Chronic barbital administration did not produce tolerance, and phenobarbital tolerant rats were not cross-tolerant to barbital. Chronic i.c.v. pentobarbital resulted in an irreversible decrease in responsiveness to its own effects and to those of other barbiturates. This was attributed to the high alkalinity (pH 9.6) of the solution, since i.c.v. injection of saline adjusted to the same pH also reduced responsiveness to i.c.v. a barbiturates. Rats tolerant to i.c.v. phenobarbital were tolerant to acute i.c.v. injection of pentobarbital. Similar cross-tolerance was observed on systemic administration of the barbiturates. The efflux rates of i.c.v. phenobarbital or barbital and their distribution to different brain areas were identical in tolerant and nontolerant rats. Awakening phenobarbital brain levels were about three times higher in tolerant rats than in nontolerant rats. 16 references. (Author abstract modified)

003205 Macdonald, Robert L.; Bergey, Gregory K. University of Michigan Medical Center, Department of Neurology, Neuroscience Laboratory Building, Ann Arbor, MI 48109 **Valproic acid augments GABA-mediated postsynaptic inhibition in cultured mammalian neurons.** Brain Research (Amsterdam). 170(3):558-562, 1979.

The postsynaptic action of valproic acid (VPA) on responses to gamma-aminobutyric acid (GABA), glycine (GLY), and glutamate (GLU) was investigated in cultured mouse spinal cord neurons. VPA produced dose dependent augmentation of GABA responses of up to 250% of control at currents that did not alter responses to GLY or GLU. The action of VPA on GABA, GLY, and GLU responses was comparable to that reported for diazepam (DZ) and phenobarbital (PhB), with the exception that PhB, but not VPA or DZ, was effective in antagonizing GLU responses. The selective augmentation of GABA mediated postsynaptic inhibition following application of VPA

to cultured mouse spinal cord neurons is discussed in relation to the mechanism of action of anticonvulsant drugs. 31 references.

003206 Maggi, A.; Enna, S. J. Department of Pharmacology, University of Texas Medical School, P. O. Box 20708, Houston, TX 77025 **Characteristics of muscimol accumulation in mouse brain after systemic administration.** Neuropharmacology (Oxford). 18(4):361-366, 1979.

Studies of the chemical characteristics of tritiated substances found in male ICR mouse brain after intravenous administration of 3H-muscimol indicated that the bulk of the drug was chemically modified in the periphery, with only a small amount (0.02%) of unchanged substance reaching the brain. In vivo competition experiments using unlabled muscimol and bicuculline suggested that 3H-muscimol in the brain may not be localized to synaptic gamma-aminobutyric acid (GABA) receptor sites. Comparison of 3H-muscimol, 3H-GABA, and 3H-phenobarbital accumulation showed that GABA and muscimol penetrated the brain to a similar extent, which was at least an order of magnitude less than phenobarbital. Chloroform/water partition coefficients of these three compounds indicated that GABA and muscimol had similar relative lipid solubilities, being 300 times less lipophilic than phenobarbital. Results suggest that the behavioral and biochemical effects of muscimol may be related to the combined action of muscimol and some derivative rather than to the presence of muscimol alone in brain. 16 references. (Author abstract modified)

003207 Maggi, A.; Schmidt, M. J.; Ghetti, B.; Enna, S. J. Department of Pharmacology, University of Texas Medical School, P.O. Box 20708, Houston, TX 77025 **Effect of aging on neurotransmitter receptor binding in rat and human brain.** Life Sciences (Oxford). 24(4):367-373, 1979.

In a study of the effects of aging on neurotransmitter receptor sites, beta-adrenergic and gamma-aminobutyric acid (GABA) binding were measured in brain areas of 3-24-month-old male Wistar rats. GABA receptor binding did not change significantly with age, but beta-adrenergic receptor binding was significantly reduced in the cerebellum and brainstem of 24-month-old rats. This loss in beta-adrenergic receptor binding does not correlate in a temporal fashion with the reported decrease in norepinephrine stimulated cyclic adenosine monophosphate accumulation in the cerebellum at 12 months of age. An age related reduction in beta-adrenergic binding was also noted the human cerebellar tissue obtained at autopsy, suggesting that in cerebellar tissue obtained at autopsy, suggesting that the cerebellar dysfunction seen with aging may be related to a loss of cerebellar neurons with noraderenergic input. 31 references. (Author abstract modified)

003208 Magnan, Jacques; Regoli, Domenico; Quirion, Remi; Lemaire, Simon; St.-Pierre, Serge; Rioux, Francis. Department of Physiology and Pharmacology, Faculty of Medicine, University of Sherbrooke, Sherbrooke, Quebec, Canada J1H 5N4 **Studies on the inhibitory action of somatostatin in the electrically stimulated rat vas deferens.** European Journal of Pharmacology (Amsterdam). 55(4):347-354, 1979.

Somatostatin (SS) inhibited electrically evoked contractions in the Wistar rat vas deferens in a dose dependent manner. This action was not modified by yohimbine, naloxone, or a mixture of antagonists containing atropine, phentolamine, methysergide, burimamide, propranolol, and indomethacin. However, the SS induced inhibition was markedly potentiated by reducing the calcium concentration of the medium from 2.5to 1.25mM and was greatly inhibited when the calcium concentration was increased from 2.5to 5.0mM. The conctractile effect of norepinephrine in unstimulated RAT vas deferens was not altered by SS. Results suggest that SS produces its inhibitory effects by interacting with specific SS receptors, presumably located in the cell membrane of adrenergic nerve terminals. The interaction between SS and its receptors may provoke a decreased diffusion of calcium ions into the nerve terminals or a decreased mobilization of calcium ions from intraneuronal stores, thereby reducing the electrically evoked release of norepinephrine. The findings reinforce the idea that SS acts as a neurotransmitter or neuromodulator in the central and autonomic nervous systems. 22 references. (Author abstract modified)

003209 Magour, S.; Baumann, M.; Assmann, G. Abteilung fur Toxikologie, Gesellschaft fur Strahlen- und Umweltforschung, Inglostadter Landstr. 1, D-8042 Nuremberg, Germany **The potentiation of alcohol-induced sleep by cadmium.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R22, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of cadmium on alcohol-induced sleep in rats are reported. Pretreatment with 1, 2, or 3mg/kg i.p. cadmium chloride prolonged the alcohol-induced sleeping time of male Wistar rats in a dose-related manner, up to 300% over controls. At all doses levels, cadmium lowered body temperature and potentiated alcohol-induced hypothermia. Administration of 3mg/kg cadmium inhibited hepatic alcohol dehydrogenase by 20%, but there were no significant differences in the elimination rates of alcohol from the blood and brain in control and cadmium treated groups. The alcohol concentration in blood and brain of cadmium treated rats at the time of awakening was lower than that of the controls, indicating an increased tissue responsiveness toward alcohol. Preliminary studies of the effects of cadmium on the metabolism of biogenic aldehydes and on the activity of synaptosomal adenosine triphosphatase in the brain suggest that cadmium enhances alcohol-induced sleep time not only by altering hepatic metabolism of alcohol, but also through cellular mechanisms in the brain. (Author abstract modified)

003210 Marsden, C. A.; Conti, J.; Strope, Elaine; Curzon, G.; Adams, R. N. Department of Physiology and Pharmacology, Medical School, Queen's Medical Centre, Clifton Boulevard, Nottingham NG7 2UH, England **Monitoring 5-hydroxytryptamine release in the brain of the freely moving unanesthetized rat using in vivo voltammetry.** Brain Research (Amsterdam). 171(1):85-99, 1979.

In vivo voltammetry was used to monitor 5-hydroxytryptamine (5-HT) release from the striatum and hippocampus of unanesthetized, unrestrained male Sprague-Dawley rats following stimulation of 5-HT cell bodies in the median raphe nucleus or administration of serotonergic drugs. P-chloroamphetamine produced a large increase in current in the striatum, which could be prevented by pretreatment with chlorophenylalanine or fluoxetine. Fluoxetine caused a small but long-lasting increase in current. Stimulation of the median raphe nucleus produced a marked and rapid rise in current in the hippocampus and a much smaller rise in striatum; this response could also be blocked by pretreatment with p-chlorophenylalanine. Rats under barbiturate anesthesia showed no clear increase in current after p-chlorophenylalanine or raphe stimulation, suggesting an affect of barbiturates on neurotransmitter release. These findings demonstrate the use of in vivo voltammetry to monitor 5-HT release in freely moving rats and indicate that a moderate decrease in brain 5-HT concentration leads to a substantial inhibition of drug or stimulation induced release of 5-HT. 26 references. (Author abstract modified)

003211 Martin, Gregory E.; Papp, Nan L. Merck Institute for Therapeutic Research, West Point, PA 19486 Effect on core

temperature of restraint after peripherally and centrally injected morphine in the Sprague-Dawley rat. Pharmacology Biochemistry and Behavior. 10(2):313-315, 1979.

The changes in core temperature (Tc) evoked by morphine in male Sprague-Dawley rats were altered when the animals were restrained in plastic holders. The Tc of freely moving rats rose after intraperitoneal administration (5, 15, 30, or 60mg/kg) or intracerebral injection (10, 20, or 50mcg) of morphine. In the restrained rat, however, these doses of morphine evoked either less marked hyperthermia or a drop in Tc. These findings emphasize the importance of restraint in determining the action of morphine on Tc. 11 references. (Author abstract modified)

003212 Martinez, Joe L., Jr.; Jensen, Robert A.; Creager, Robert; Veliquette, John; Mesing, Rita B.; McGaugh, James L.; Lynch, Gary. Dept. of Psychobiology, School of Biological Sciences, University of California, Irvine CA 92717 **Selective effects of enkephalin on electrical activity of the in vitro hippocampal slice.** Behavioral and Neural Biology. 26(2):128-131, 1979.

The effect of infusion of small concentrations of D-Ala-D-Leu-enkephalin on electrical responses to stimulation of the in vitro hippocampal slice preparation was investigated. Concentrations of enkephalin as low as 10nM dramatically increased the magnitude of the population spike response of pyramidal cell neurons to stimulation of their Schaffer-commissural afferents. This effect had a rapid onset and was quickly eliminated when the peptide was removed from the perfusion medium. Enhancement of the population spike was blocked by the opiate receptor antagonist naloxone, which, by itslef, did not affect either synaptic potentials or the population response. In contrast, even relatively high concentrations of the enkephalin produced no detectable effect on either the synaptic potentials recorded in the dendrites or the antidromic response of the pyramidal cells to stimulation of their axons. These findings suggest that enkephalin attenuates the effect of either a feedback or feed forward inhibitory system which is usually activated by stimulation of the Schaffer-commissural pathways. 5 references. (Author abstract)

003213 Matsuda, Toshio; Yamagami, Satoru; Lee, Eibai; Maeda, Sadaaki; Baba, Akemichi; Iwata, Heitaroh. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Osaka University, Osaka, Japan **Possible roles of brain taurine in convulsions of barbiturate-dependent rats and E1 mice.** Neurochemical Research. 3(5):679, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. To determine the role of taurine in convulsions, the taurine content in the brain of barbiturate dependent rats and E1 mice was assessed. Chronic administration of barbital sodium caused a significant increase in cerebellar taurine content. After withdrawal, taurine content in the cerebral cortex increased and that in the cerebellum returned to control values. Gamma-aminobutyric acid content in the cerebral cortex and brainstem decreased during the administration of barbital sodium and was restored to control value after withdrawal. A significant decrease in aspartate content in the cerebral cortex was observed after withdrawal, but glutamate level did not change during or after drug administration. Taurine content in the brain of convulsive E1 mice was significantly higher than in the brain of nonconvulsive E1 mice or ddY mice. The taurine content in the cerebral cortex and brainstem in E1 mice rapidly decreased to control level after convulsion, but cerebellar taurine remained elevated for 3 hours after convulsion. Results suggest that taurine may be related to the abstinence syndrome in barbiturate dependent animals and to convulsions in E1 mice. (Author abstract modified)

003214 Matsushita, Hiroshi; Ishikawa, Koichi; Shimazu, Takashi. Division of Neurochemistry, Psychiatric Research Institute of Tokyo, Kamikitazawa, Setagaya-ku, Tokyo 156, Japan **Chemical coding of the hypothalamic neurones in metabolic control; I. acetylcholine-sensitive neurones and glycogen synthesis in liver.** Brain Research (Amsterdam). 163(2):253-261, 1979.

Changes in liver glycogen synthetase and phosphorylase activities were analyzed in male Wistar rats following microinjection of different neurotransmitters into the lateral hypothalamus (LH). Cholinergic stimulation of the LH with minute amounts of acetylcholine or carbachol resulted in a marked increase in the active form of glycogen synthetase, but did not affect phosphorylase activity. Total activity of glycogen synthetase (active plus inactive forms) was not increased significantly, indicating that the effect of cholinergic stimulation was due to activation of the enzyme. Stimulation of the LH with noradrenaline, dopamine, serotonin, or GABA had no significant effect on the activities of glycogen synthetase and phosphorylase in liver. The effect of cholinergic stimulation of the LH on liver glycogen synthetase was blocked by previous intrahypothalamic microinjection of anticholinergic agents or by previous i.p. injection of N-methyl atropine or hexamethonium. Results suggest that acetylcholine sensitive neurons in the LH are specifically concerned with regulation of glycogen synthetase and that the cholinergic system in an LH/vagal mediates the neural regulation of glycogen synthesis in the liver. 30 references. (Author abstract modified)

003215 Mayer, N.; Saria, A. Institut fur Experimentelle und Klinische Pharmakologie, Universitatsplatz 4, A-8010 Graz, Austria **Substance P: properties of binding to synaptic vesicles.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R68, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, a study of the binding of 125I-Tyr8-substance P (SP) to synaptic vesicles (SV) is described. Binding was found t‹ be specific and of high affinity, with a dissociation constant of 0.3nM. Binding sites were distributed (in descending order) in the medulla oblongata, midbrain, hypothalamus, striatum, cortex, and cerebellum; this rank order of binding site distribution corresponded to the rank order for SP content, except in the hypothalamus. The binding sites could be extracted with petroleum ether/chloroform; this extract contained 34% of the phospholipids and 4% of the protein of SV. Calcium and magnesium ions (1-10mM) decreased the number of SP binding sites, without altering their affinity. Exclusion of the divalent cations enhanced the number of binding sites. Pretreatment of SV with trypsin and phospholipases A2, C, and D abolished the SP binding. Treatment with N-ethylmeleimide, iodoacetate, or N-bromo-succinimide had no influence on binding. Results indicate that SP binding sites are storage sites of a proteolipid nature. (Author abstract modified)

003216 McCall, Robert B.; Aghajanian, George K. Department of Psychiatry, Yale University School of Medicine, New Haven, CT 06508 **Serotonergic facilitation of facial motoneuron excitation.** Brain Research (Amsterdam) 169(1):11-27, 197.

The effect of serotonin (5-HT) on motoneurons in the facial nucleus was investigated in male albino rats. Microiontophoretic application of 10-200nA pulses of 5-HT lasting from 1-10 minutes failed to excite facial motoneurons. However, small amounts of 5-HT facilitated the subthreshold and threshold excitatory effects of iontophoretically applied glutamate on these cells. The current of glutamate required to produce an activation of facial motoneurons was reduced by at least 50% in the presence of 5-HT, and 5-HT markedly shifted to the left the cu-

mulative dose/response curve of glutamate-induced excitation of motoneurons. The 5-HT releasing agent p-chloroamphetamine facilitated the effects of glutamate on motoneurons. The 5-HT releasing agent p-chloroamphetamine facilitated the effects of glutamate on motoneurons in control animals, but not in those pretreated with the 5-HT synthesis inhibitor p-chlorophenylalanine. Microiontophoretically applied 5-HT also facilitated the subthreshold and threshold excitation of motoneurons produced by stimulation of the motor cortex and the red nucleus. The facilitating effect of 5-HT was blocked by methysergide. Results indicate that 5-HT does not have direct excitatory effects in the facial nucleus, but acts as a gain setter to enhance the effects of excitatory afferent inputs. 51 references. (Author abstract modified)

003217 McCulloch, James; Teasdale, Graham. Department of Neurosurgery, University of Glasgow, Glasgow, Scotland **Effects of apomorphine upon local cerebral blood flow.** European Journal of Pharmacology (Amsterdam). 55(1):99-102, 1979.

The effects of apomorphine (0.1mg/kg) on local cerebral blood flow were examined in unanesthetized baboons. Similar increases in blood flow were seen in the caudate nucleus (40%), cerebral cortex (38%), and cerebellar cortex (26%). Since these structures differ markedly in the density of their dopaminergic innervation, these results suggest that the ability of apomorphine to increase tissue perfusion in a given region of the CNS is not directly related to the density of dopaminergic innervation to the region. 9 references. (Author abstract modified)

003218 McGeer, P. L.; McGeer, E. G.; Innanen, V. T. Kinsmen Laboratory of Neurological Research, Department of Psychiatry, University of British Columbia, Vancouver, BC, V6T 1W5, Canada **Dendro axonic transmission. I. Evidence from receptor binding of dopaminergic and cholinergic agents.** Brain Research (Amsterdam). 169(3):433-441, 1979.

In a study of potential presynaptic receptor sites for dendritically released transmitters, spiroperidol (dopaminergic receptor) binding in the substantia nigra and quinuclidinyl benzilate (muscarinic cholinergic receptor) and alpha-bungarotoxin (nicotinic cholinergic receptor) binding in the neostriatum were measured in male Wistar rats with lesions designed to produce selective alterations in presynaptic and postsynaptic neuronal processes. The binding results were correlated with measurements on the individual striata of tyrosine hydroxylase and glutamic acid decarboxylase activities. Results indicate that muscarinic receptor sites in the striatum are on neuronal perikarya or dendrites, whereas nicotinic receptor sites are on afferent dopaminergic and corticostriatal neurons. Spiroperidol binding in the substantia nigra occurs on afferent striatonigral neurons. These findings suggest that dendritically released transmitters may act directly on axonal endings, possibly modulating the amount of presynaptic transmitter released following repeated axonal stimulation. 35 references. (Author abstract modified)

003219 McGilliard, Kip L.; Takemori, A. E. Department of Pharmacology, University of Oregon Health Sciences Center, 3181 S.W. Jackson Park Road, Portland, OR 97201 **The effect of dopaminergic modifiers on morphine-induced analgesia and respiratory depression.** European Journal of Pharmacology (Amsterdam). 54(1/2):61-68, 1979.

The influence of the dopaminergic system on morphine-induced analgesia and respiratory depression was investigated in male Swiss-Webster mice. The dopamine receptor blockers haloperidol and pimozide potentiated morphine analgesia, whereas stimulation of dopaminergic activity with L-dopa methyl ester inhibited morphine analgesia. Morphine-induced depression of respiratory rate was potentiated by haloperidol and inhibited by pimozide or L-dopa. Results suggest that the dopaminergic system plays a modulating role in morphine-induced analgesia, but not in morphine-induced respiratory depression. 35 references. (Author abstract modified)

003220 McGinn, Michael. University of California, Davis, CA 95616 **Effects of apomorphine and haloperidol on seizure activity in mice.** Behavior Genetics. 8(6):557, 1978.

A summary of a paper read at the Eighth Annual Meeting of the Behavior Genetics Association, held at the University of California at Davis, June 1978, is presented. The dopamine receptor agonist apomorphine and antagonist haloperidol were tested for their effects on seizure activity in mice. Audiogenic seizure susceptibility was induced in D57CL/6J mice by acoustic deprivation which began 17 days after birth and ended at 21 days after birth. Animals were tested on the following day. Apomorphine protected mice from audiogenic seizures susceptibility was induced in D57CL/6J mice by acoustic deprivation which began 17 days after birth and ended at 21 days after birth. Animals were tested on the following day. Apomorphine protected mice from audiogenic seizures at doses ranging from 0.3mg/kg to 2.5mg/kg when injected subcutaneously 15 minutes prior to test. Pretreatment with haloperidol blocked the protective effects of a 1.3mg/kg dose of apomorphine. Apomorphine protection may be specific to audiogenic seizures as no protection was seen with electroshock seizures. Haloperidol alone has no effect on seizures, perhaps because of the already high degree of seizure severity in acoustically deprived mice. Data from DBA/2J mice were presented to compare the effects of these drugs on environmentally and genetically determined audiogenic seizures. (Journal abstract modified)

003221 McLennan, H.; Lodge, D. Department of Physiology, University of British Columbia, 2075 Westbrook Mall, Vancouver, V6T 1W5, Canada **The antagonism of amino acid-induced excitation of spinal neurones in the cat.** Brain Research (Amsterdam). 169(1):83-90, 1979.

DL-alpha-aminoadipate (DLalphaAA) and L-glutamate diethylester (GDEE) were compared as antagonists of the excitatory effects of amino acids on interneurons and of acetylcholine on Renshaw cells in the cat spinal cord. Ibotenate and the optical isomers of N-methylaspartate were the most readily antagonized by DLalphaAA and the least by GDEE. L-glutamate and guisgualate were more affected by GDEE and the least by DLalphaAA. The actions of L-cysteate, L-aspartate, D-homocysteate, and L-homocysteate were reduced to some extent by both. Kainate was relatively insensitive to both antagonists. Acetylcholine excitations of Renshaw cells were often reduced by GDEE and occasionally by DLalphaAA. Results indicate that at least two populations of amino acid receptors are present on spinal neurons, with different sensitivities to the antagonists. 18 references. (Author abstract modified)

003222 Meites, Joseph; Bruni, John F.; Van Vugt, Dean A.; Smith, Arlene F. Department of Physiology, Neuroendocrine Research Laboratory, Michigan State University, East Lansing, MI 48824 **Relation of endogenous opioid peptides and morphine to neuroendocrine functions.** Life Sciences (Oxford). 24(15):1325-1336, 1979.

Recent literature on the effects of morphine, related drugs, and endogenous opioid peptides (EOP) on endocrine function is reviewed. Morphine and the EOP stimulate growth hormone (GH), prolactin (PRL), and adrenocorticotropin release and inhibit release of luteinizing hormone, follicle stimulating hormone, and thyrotropin. Injection of naloxone in rats results in a rapid fall in serum concentrations of GH and PRL, suggesting that the EOP help maintain basal secretion of these hormones.

Morphine and the EOP appear to act via hypothalamic neurotransmitters to influence release of hypothalamic hormones into the pituitary portal vessels. Preliminary observations suggest the EOP may increase serotonin and decrease dopamine metabolism in the hypothalamus, which could account for nearly all their effects on pituitary hormone secretion. 65 references. (Author abstract modified)

003223 Meunier, Jean-Claude; Zalac, Jean-Marie. Laboratoire de Pharmacologie et de Toxicologie Fondamentales, Centre National de la Recherche Scientifique, 31078 Toulouse Cedex, France **Cerebellar opiate receptors in lagomorphs. Demonstration, characterization and regional distribution.** Brain Research (Amsterdam). 168(2):311-321, 1979.

Opiate receptors in the cerebellum of lagomorphs (pika, rabbit, and hare) were characterized. Cerebellar homogenates from lagomorphs bound 100-100fmol tritiated etorphine per milligram protein, compared with only 10-15fmol/mg in the cerebellum of rodents. In rabbit cerebellum, the binding properties of the etorphine sites were indistinguishable from those of genuine opiate receptor sites in brain. They exhibited a high affinity for (3H)etorphine, (3H)naloxone, morphine, and levorphanol, but not for dextrophan. Sodium ions enhanced binding of naloxone and diminished binding of etorphine, morphine, and levorphanol to cerebellar homogenates. Higher concentrations of (3H)etorphine binding sites were found in the rabbit neocerebellum (hemispheres) than in the archecerebellum (lingula and flocculonodular lobe). The specific concentration of opiate receptor sites in the isolated molecular layer was at least twice that in the isolated granular layer and 10 times that in white matter. The use of the rabbit cerebellum as a tissue for analyzing the mode of action of the enkephalins is discussed. 34 references. (Author abstract modified)

003224 Miller, Jeannette C.; Friedhoff, Arnold J. Millhauser Laboratories, Department of Psychiatry, New York University Medical Center, New York, NY 10016 **Effects of haloperidol and apomorphine on the K- depolarized overflow of (3H)dopamine from rat striatal slices.** Biochemical Pharmacology (Oxford). 28(5):688-690, 1979.

The effects of haloperidol and apomorphine on basal and on stimulation evoked overflow of (3H)dopamine by Kdepolarization of rat striatal slices were examined in male Wistar rats. Haloperidol was observed to have a biphasic effect on the total 3H overflow after Kdepolarization. Low concentrations increased the stimulated overflow of 3H, while higher concentrations reduced the Kevoked overflow. Basal 3H overflow was unaffected by haloperidol at low concentrations but was enhanced markedly by high concentrations. Apomorphine was not very effective in inhibiting stimulation-induced overflow of 3H. It is concluded that the marked enhancement of K stimulated overflow of 3H dopamine from striatal slices by low concentrations of haloperidol and the antagonism of this effect by dopamine or apomorphine are consistent with a presynaptic and/or postsynaptic receptor effect. 25 references.

003225 Minard, Frederick N.; Cain, John C.; Grant, Dennis S.; Dren, Anthony T. Department of Pharmacology, Abbott Laboratories, North Chicago, IL 60064 **N-o-methoxyphenylpiperazine: a simple blocker of dopaminergic receptors in the brain.** Journal of Pharmacy and Pharmacology (London). 31(2):91-93, 1979.

N-o-methoxyphenylpiperazine (MPP) was a moderately effective blocker of brain dopamine receptors in vivo. MPP increased the concentration of male Long-Evans rat brain homovanillic acid (HVA) with a potency and time course similar to those observed with clozapine. The increased concentrations of HVA did not result from decreased outflow from brain, since HVA also decreased rapidly after a subsequent injection of pargyline. MPP blocked the circling behavior induced by apomorphine in mice with unilateral striatal lesions, and MPP and apomorphine reciprocally blocked the occurrence of stereotypy and increased HVA in rats. Diazepam partially prevented the MPP-induced elevation of HVA. Results indicate that MPP offers an opportunity to design antischizophrenic drugs with desired pharmacological properties by structural additions to a simple active moiety. 12 references. (Author abstract modified)

003226 Minneman, Kenneth P.; Dibner, Mark D.; Wolfe, Barry B.; Molinoff, Perry B. Department of Pharmacology, University of Colorado Medical Center, Denver, CO 80262 **Beta1-and Beta2 adrenergic receptors in rat cerebral cortex are independently regulated.** Science. 204(4395):866-868, 1979.

Repeated administration of the tricyclic antidepressant desmethylimipramine to adult rats for 10 days caused a 40% decrease in the density of beta1-adrenergic receptors in the cerebral cortex but had no effect on the density of beta2-adrenergic receptors. Conversely, destruction of noradrenergic neurons by administration of 6-hydroxydopamine to neonatal rats caused a 64% increase in the density of beta1-adrenergic receptors in adult cerebral cortex with no change in the density of beta2-adrenergic receptors. These results suggest that the beta-adrenergic receptors in rat cortex involved in neuronal function are primarily of the beta1 subtype. 11 references. (Author abstract)

003227 Miranda, H.; Huidobro, F.; Huidobro-Toro, J. Pablo. Huidobro-Toro: Department of Pharmacology S-1210, Medical Center, University of California, San Francisco, CA 94143 **Evidence for morphine and morphine-like alkaloid responses resistant to naloxone blockade in the rat vas deferens.** Life Sciences (Oxford). 24(16):1511-1518, 1979.

The application of morphine or its derivatives to the isolated Sprague-Dawley rat vas deferens produced an increase in the electrically-induced muscular twitch, whereas leucine-enkephalin and D-alanine=2-methionine enkephalinamide produced a dose dependent twitch inhibition. The effect of morphine and derivatives was not antagonized by naloxone, but the depression caused by the opiate pentapeptides or beta-endorphin was readily reversed by naloxone. Tolerance developed to the in vitro effect of morphine; vasa deferentia from morphine tolerant/dependent rats were about six times less sensitive to the effect of morphine and about five times less sensitive to the effect of leucine-enkephalin than were control preparations. 17 references. (Author abstract modified)

003228 Mobley, Philip L.; Sanders-Bush, Elaine; Smith, Howard E.; Sulser, Fridolin. Department of Pharmacology, Vanderbilt University, Nashville, TN 37203 **Modification of the noradrenergic cyclic AMP generating system in the rat limbic forebrain by amphetamine: role of its hydroxylated metabolites.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 306(3):267-273, 1979.

Cyclic adenosine monophosphate (AMP) responses to norepinephrine (NE) were examined in slices of male Sprague-Dawley rat limbic forebrain after administration of (S)-amphetamine. Chronic but not acute administration of (S)-amphetamine caused a significant reduction in the sensitivity of the cyclic AMP generating system to NE, without changing the basal level of the nucleotide. After withdrawal of the drug, the cyclic AMP response to NE returned to control values within 4 days. In vitro, (S)-p-hydroxyamphetamine (POH) and all stereoisomers of p-hydroxynorephedrine (PHN) except (alphaS,betaR)-PHN enhanced the cyclic AMP response to low concentrations of NE. Since (alphaS,betaR)-PHN inhibited in a dose dependent manner the high affinity uptake of tritiated NE into crude syn-

aptosomal fractions of the limbic forebrain, the physiological enantiomer of PHN may also exert receptor blocking properties. Results suggest that the hydroxylated metabolites of (S)-amphetamine modify the action of the parent drug on central noradrenergic function at the level of the NE receptor coupled adenylate cyclase system. 29 references. (Author abstract modified)

003229 Moore, K. E.; Annunziato, L.; Gudelsky, G. A. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **Studies on tuberoinfundibular dopamine neurons.** Advances in Biochemical Psychopharmacology. 19:193-204, 1978.

The steady-state concentrations and turnover of dopamine in the striatum, olfactory tubercle, and median eminence (which contain the terminals of the nigrostriatal, mesolimbic, and tuberoinfundibular neurons, respectively) were measured in Sprague-Dawley rats. Results indicate that dopamine neurons in the tuberoinfundibular system respond to pharmacological and endocrinological manipulations in a manner that is qualitatively different from dopamine neurons in the other two dopaminergic systems. The tuberoinfundibular neurons appeared to be regulated, in part, by circulating levels of prolactin. Prolactin increased the activity of these neurons by acting directly within the medial basal hypothalamus, possibly on the tuberoinfundibular neurons. 20 references. (Author abstract modified)

003230 Moroni, F.; Cheney, D. L.; Peralta, E.; Costa, E. Costa: Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Opiate receptor agonists as modulators of gamma-aminobutyric acid turnover in the nucleus caudatus, globus pallidus and substantia nigra of the rat.** Journal of Pharmacology and Experimental Therapeutics. 207(3):870-877, 1978.

Subcutaneous injection of morphine or intraventricular injection of beta-endorphine altered the gamma-aminobutyric acid (GABA) turnover rate (TR/GABA) in the substantia nigra, globus pallidus, and nucleus caudatus of male Sprague-Dawley rats. The TR/GABA decreased in nucleus caudatus but increased in globus pallidus and substantia nigra. These changes were dose related and were inhibited by naloxone. The GABA receptor agonist muscimol caused dose related catalepsy when injected into the globus pallidus but not when injected into the substantia nigra. These results suggest that an increase in GABA utilization in the globus pallidus, but not in the substantia nigra, is operative in producing the catalepsy caused by opioid receptor agonists. The stimulation of opiate receptors also exerts an inhibitory influence on the TR/GABA of nucleus receptors suggesting that these receptors may inhibit GABA neurons in the striatum. 50 references. (Author abstract modified)

003231 Mucha, R. F.; Kalant, H. Addiction Research Foundation of Ontario, 33 Russell Street, Toronto, Ontario, Canada M5S 2S1 **Effects of desglycinamide(9)-lysine(8)-vasopressin and prolyl-leucyl-glycinamide on oral ethanol intake in the rat.** Pharmacology Biochemistry and Behavior. 10(2):229-234, 1979.

Daily administration of 1mcg of desgylcinamide(9)-lysine(8)-vasopressin (DGLVP) or 10mcg of prolyl-leucyl-glycinamide (PLG) augmented the increase in the amount and concentration of ethanol consumed during forced ethanol consumption in male Sprague-Dawley rats. Injections of 1mcg PLG or 0.42 or 42mcg of lysine(8)-vasopressin did not produce significant changes in ethanol consumption. When 4mcg DGLVP was administered every second day as a long-acting zinc phosphate complex, no additional changes in ethanol consumption were observed. The peptides did not significantly affect ethanol intake when rats were given a choice between ethanol and tap water. 20 references. (Author abstract modified)

003232 Muramatsu, Makoto; Kakita, Kiyohito; Nakagawa, Kazuo; Kuriyama, Kinya. Department of Pharmacology, Kyoto Prefectural University of Medicine, Kamikyo-ku, Kyoto 602, Japan **A modulating role of taurine on release of acetylcholine and norepinephrine from neuronal tissues.** Japanese Journal of Pharmacology. 28(2):259-268, 1978.

The effects of taurine (2-aminoethanesulfonic acid) on the uptake and release of 14C-acetylcholine (14C-ACh) and 3H-norepinephrine (3H-NE) in the superior cervical ganglion and cerebral cortex of the rat were studied. Taurine suppressed high potassium evoked release of 14C-ACh and 3H-NE from the rat superior cervical ganglia and cerebral cortical slices, while the drug did not modify per se the uptake and unstimulated (spontaneous) release of 14C-ACh and 3H-NE in these tissues. Taurine also inhibited the release of 3H-NE from the crude synaptosomal fraction of the rat brain without affecting the uptake. These results suggest that taurine may act as a modulator of neuronal activity, possibly by stabilizing excitable membranes and by suppressing the release of neurotransmitters at synapses. 35 references. (Author abstract)

003233 Nadler, J. Victor. Department of Pharmacology, Duke University Medical Center, Durham, NC 27710 **Kainic acid: neurophysiological and neurotoxic actions.** Life Sciences (Oxford). 24(4):289-299, 1979.

The actions of kainic acid (KA) on vertebrate and invertebrate nervous systems are reviewed and possible neuroexcitatory and neurotoxic mechanisms are considered. KA is an anthelmintic drug structurally related to glutamate and has excitatory electrophysiological actions on neurons in the vertebrate neuromuscular junction. Recent experiments have shown that KA destroys neuronal cell bodies and dendrites in several regions of vertebrate CNS, without damaging afferent fibers and fibers of passage. KA has also been used to make lesions in experimental animals that closely resemble the pathology associated with certain neurological conditions in humans. 86 references. (Author abstract modified)

003234 Nakamura, Shigenobu; Kameyama, Masakuni; Ikeda, Kenji; Namba, Masuyuki. Department of Geriatrics, Faculty of Medicine, Kyoto University, Kyoto, Japan **Significance of gamma-aminobutyric acid (GABA) and dopamine in choreiform movements.** Neurochemical Research. 3(5):656, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. Dopa, noradrenaline, and dopamine inhibited glutamic acid decarboxylase (GAD) purified from basal ganglia of rat brain. GAD was not inhibited by L-tryptophan, 5-hydroxytryptophan, adrenaline, serotonin, vanilyl mandelic acid, or 5-hydroxyindole acetic acid. In synaptosomes from rat basal ganglia, GAD was inhibited by l-dopa, noradrenaline, and dopamine, but L-dopa was the most potent inhibitor. GAD activity was significantly lower in basal ganglia and diencephalon of rats given l-dopa for 40 days than in control rats, but only when measured under isotonic conditions. The sera of patients with Huntington's chorea showed low levels of GAD, except in two patients with rigidity and slight choreiform movements and remarkably reduced levels of L-aromatic amino acid decarboxylase activity. (Author abstract modified)

003235 Neckers, L. M.; Rohwer, R. G.; Trepel, J. B.; Gajdusek, D. Carlton; Wyatt, R. J. Laboratory of Clinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Reduction of 5-hydroxytryptamine levels in brain and blood of scrapie affected animals. (Unpublished paper).** Washington, DC, NIMH, 1979. 1 p.

Levels of 5-hydroxytryptamine (5-HT) were assayed by high pressure liquid chromatography, and markedly decreased levesl of 5-HT were found in brain tissue and blood of mice with advanced scrapie disease compared to control mice. Normal levels in brain were 340ng 5-HT/g while less than 20ng/g could be detected in scrapie affected mice. Normal levels in blood were 769ng/ml versus 462ng/ml in affected animals. In hamsters, blood levels in uninoculated age matched animals were 258ng/ml, and in animals sham inoculated with normal brain they were 319ng/ml, whereas in scrapie affected animals they were 118ng/ml. Whether this greater than 10 fold decrease in 5-HT levels in brain and 2 fold decrease in blood indicates a primary loss in synthetic ability, an enhanced catabolism, or a new binding activity for 5-HT secondary to the pathological changes is as yet unknown. Analysis of 5-HT can, however, be used to follow the course of infection in laboratory animals and the natural diseases. (Author abstract)

003236 Nelson, D. L.; Herbet, A.; Glowinski, J.; Hamon M. Groupe NB-INSERM U.114, College de France, 11, place Marcelin Berthelot, F-75231 Paris Cedex 05, France **(3H)Harmaline as a specific ligand of MAO A -- II. Measurement of the turnover rates of MAO A during ontogenesis in the rat brain.** Journal of Neurochemistry (Oxford). 32(6):1829-1836, 1979.

Combined measurement of monoamine oxidase type-A (MAO-A) activity and tritiated harmaline binding capacity revealed a higher concentration of MAO-A in the brains of young (14-28-day-old) Sprague-Dawley rats than in adult rats. The turnover rates for this enzyme in the forebrain and brainstem were calculated by following the recovery of MAO-A activity and of (3H)harmaline binding capacity after acute treatment with 75mg/kg i.p. pargyline. Both the fractional rate constant for MAO-A degradation and the synthesis rate per gram of fresh tissue were significantly higher in young animals than in adults. However, the absolute synthesis rates of MAO-A per brain area were similar in the two age groups. Results indicate that (3H)harmaline binding is a valid means of evaluating changes in MAO-A turnover in tissues. 28 references. (Author abstract modified)

003237 Nelson, D. L.; Herbet, A.; Petillot, Y.; Pichat, L.; Glowinski, J.; Hamon, M. Groupe NB, INSERM U.114, College de France, 11, place Marcelin Berthelot, F-75231 Paris Cedex 05, France **(3H)Harmaline as a specific ligand of MAO A -- I. Properties of the active site of MAO A from rat and bovine brains.** Journal of Neurochemistry (Oxford). 32(6):1817-1827, 1979.

A high affinity specific binding site for tritiated harmaline was detected in membranes from Sprague-Dawley rat and bovine brains, in close association with monoamine oxidase type-A (MAO-A) activity. Among psychoactive drugs, only MAO inhibitors prevented the specific binding of (3H)harmaline. MAO-A inhibitors (clorgyline and Lilly 51641) were more efficient than the MAO-B inhibitors (deprenyl and pargyline) in displacing (3H)harmaline from its binding site. The specific binding site for (3H)harmaline exhibited all the properties expected for the active site of MAO-A. 36 references. (Author abstract modified)

003238 Neuser, V.; Kesselring, K.; Graf, E. A. Nattermann & Cie, D-5000 Koln 30, Post Box 30 10 60, Germany **Local cerebral glucose-utilisation (LCGU) and local cerebral blood flow (LCBF) under a NaNO(2) evocated hypoxia in naive and drug pretreated rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R43, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of pretreatment with dihydroergocristine or papaverine on local cerebral glucose utilization (LCGU) and local cerebral blood flow (LCBF) after mild hypoxia in rats are reported. In control rats the LCGU was diminished by as much as 30% and the LCBF was increased by up to 20% in subcortical structures, whereas the LCGU and LCBF of cortical structures were not affected by hypoxia. Pretreatment with papaverine or dihydroergocristine prevented the depression of LCGU and impaired subcortical reactive hyperemia. 2 references. (Author abstract modified)

003239 Nieoullon, Andre; Cheramy, Andre; Leviel, Vincent; Glowinski, Jacques. Groupe NB, INSERM U.114, College de France, 11, place Marcelin-Berthelot, F-75231 Paris Cedex 05, France **Effects of the unilateral nigral application of dopaminergic drugs on the in vivo release of dopamine in the two caudate nuclei of the cat.** European Journal of Pharmacology (Amsterdam). 53(3):289-296, 1979.

The effects of the unilateral application of d-amphetamine, benztropine, haloperidol, and thioproperazine to one substantia nigra on the release of 3H-dopamine (3H-DA) in the two caudate nuclei were examined in halothane anesthetized cats. The nigral application of d-amphetamine or benztropine reduced the release of 3H-DA in the ipsilateral caudate nucleus and induced an opposite effect in the contralateral side. In contrast, the nigral application of haloperidol or thioproperazine slightly increased the release of 3H-DA in the ipsilateral caudate nucleus and induced a reduction of 3H transmitter release in the contralateral side. These results emphasize the role of the dendritic release of DA in the control of the activity of dopaminergic neurons and confirm previous findings concerning the existence of a reciprocal control in the activity of the two dopaminergic pathways. 22 references. (Author abstract modified)

003240 Nomura, Y.; Komori, T.; Okuda, S.; Segawa, T. Dept. of Pharmacology, Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Kasumi 1-2-3, Hiroshima 734, Japan **Developmental change in striatal concentration of homovanillic acid and 3,4-dihydroxyphenylacetic acid in response to apomorphine and haloperidol treatment.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(1):25-30, 1979.

The striatal concentration of homovanillic acid (HVA) and 3,4-dihydroxyphenylacetic acid (DOPAC) was estimated in developing Wistar rats treated with increasing doses (1-10mg/kg i.p.)of haloperidol on postnatal day 1-10, 11-20, or 21-30 and sacrificed 30 minutes after an injection of apomorphine on days 14, 24, and 34, respectively. Striatal HVA and DOPAC levels were decreased in all three haloperidol treated groups, and haloperidol treatment enhanced apomorphine induced reduction of striatal HVA content in the two older groups. These findings suggest that dopamine receptors and/or a functional link in the feedback mechanism controlling dopamine release are not fully developed at birth but develop during early postnatal life. 16 references. (Author abstract modified)

003241 North, R. A. Neurophysiology Laboratory, Department of Pharmacology, Loyola University Medical Center, Maywood, Il 60153 **Opiates, opioid peptides and single neurones.** Life Sciences (Oxford). 24(17):1527-1545, 1979.

The effects of opiates and opioid peptides on single neurons are reviewed. Current electrophysiological evidence suggests the opiates and opioid peptides may act presynaptically to depress the release of certain neurotransmitters, possibly through a novel mechanism such as a hyperpolarization and/or conductance increase in fine nerve terminals. The opiates and opioid peptides also appear to interfere directly with the postsynaptic actions of certain transmitters reducing their ability to alter

ionic conductances. The compounds may also have a direct postsynaptic action on some cells, which is predominantly inhibitory and nonsomatic. The interpretation of data obtained in experiments using naloxone reversal as a measure of opiate receptor mediated events is discussed. 126 references.

003242 Oishi, Minoru; Niimi, Tsuguo; Takagi, Shigeharu; Takeoka, Tsuneyuki; Seki, Takao; Toyoda, Masanaru; Gotoh, Fumio. Dept. of Neurology, School of Medicine, Keio University, 35, Shinanomachi, Shinjuku-ku Tokyo, Japan **Chemical control of cerebral circulation: modification by a new vasodilator (YC-93).** Journal of the Neurological Sciences. 36(3):403-410, 1978.

The influence of a new vasodilator, YC-93, a derivative of 1,4-dihydropyridine, on cerebral circulation and cerebrovascular C02 reactivity was investigated. Cerebrocortical P02, cerebrocortical Pco2, cerebrocortical blood flow, and arterial blood pressure were continuously recorded by means of a Po2 electrode, a Pco2 electrode, and a plate type crossed thermocouple flowmeter placed on an exposed pial surface of the cat brain. The changes in each parameter induced by YC-93 were compared with those induced by papaverine hydrochloride. The effects of 5% C02 inhalation were compared before and after the intravenous injection of YC-93. YC-93 showed a more marked and longer lasting hypotensive effect than papaverine and yet produced a significant increase in cerebrocortical Po2. After the administration YC-93, the degree of the increase in cerebrocortical Po2 during 5% C02 inhalation was reduced significantly in comparison with that before the administration. The data indicate that YC-93 has a vasodilating effect on cerebral blood vessels and that the drug causes a decrease in cerebrovascular C02 reactivity. 30 references. (Author abstract)

003243 Okamoto, Koichi; Sakai, Yutaka. Department of Pharmacology, National Defense Medical College, Tokorozawa, Saitama, Japan **Augmentation by chlordiazepoxide of the inhibitory effects of taurine, beta-alanine and gamma-aminobutyric acid on spike discharges in guinea-pig cerebellar slices.** British Journal of Pharmacology (London). 65(2):277-285, 1979.

Chlordiazepoxide (CDP, 1-100mcM) enhanced the inhibitory action of exogenous gamma-aminobutyric acid (GABA), beta-alanine, and taurine on spontaneous spike discharges in the guinea-pig cerebellar slices. CDP did not enhance the effect of exogenous glycine. CDP (5-100mcM) reversed the picrotoxin-induced antagonism of the inhibitory action of exogenous GABA and the strychnine-induced antagonism of the actions of exogenous beta-alanine. The inhibition of spontaneous spike discharges of Purkinje cells, evoked by electrical stimulation of the slices, was also enhanced by CDP (10-100mcM). The blocking action of 10 or 20mcM picrotoxin or strychnine on the stimulus evoked inhibition of spike discharges was also reversed by CDP (10mcM). 34 references. (Author abstract modified)

003244 Orlova, N. V. Institut vysshey nervnoy deyatel'nosti i neyrofiziologii Akademii nauk SSSR, Moscow, USSR **/The role of catecholaminergic brain mechanisms in the fixation of a temporary connection./** Rol' katekholaminergicheskikh mekhanizmov golovnogo mozga v fiksatsii vremennykh svyazey. Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova (Moskva). 28(3):538-541, 1978.

Three-hundred eighty-two white male rats which had been conditioned to show defensive and drinking reflexes were injected with disulfiram and L-dopa to compare the effects of the two drugs on the reflex activity. The disulfiram was used to lower the noradrenaline content in the brain, while the L-dopa was used to raise the catecholamine content. A big drop in noradrenaline content, while disturbing the elaboration of conditioned defensive reflexes, did not prevent their fixation. Increased catecholamine resulting from L-dopa injection did not affect the elaboration of defensive reflexes or the fixation of defensive and drinking reflexes. Interference with the activity of the cerebral catecholaminergic mechanisms was shown to have no direct affect on the fixation of temporary connections regardless of the type of emotional reinforcement used in their elaboration. 12 references. (Journal abstract modified)

003245 Oshimo, T.; Nagao, T.; Sto, M.; Mitsunobu, K.; Otsuki, S. Department of Neuropsychiatry, School of Medicine, Okayama University, Okayama, Japan **Relationship of seizure susceptibility and generalized convulsion to brain monoamine concentrations in the kindled cat brain.** Neurochemical Research. 3(5):655-666, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The relationship of persistent seizure susceptibility and generalized convulsions to monoamine concentrations in 11 brain structures was studied in amygdaloid kindled cats. Except for an increase in 5-hydroxyindoleacetic acid (5-HIAA) concentration in the nucleus amygdaloideus, no changes in 5-hydroxytryptamine (5-HT), 5-HIAA, or homovanillic acid (HVA) concentrations were found in cats with persistent seizure susceptibility, examined 7 days after the final generalized convulsion. The HVA level increased in the nucleus amygdaloideus and hypothalamus immediately after the generalized convulsions, but returned to preconvulsive level within 24 hours. Administration of reserpine or parachlorophenylalanine significantly increased the interictal discharge frequency. Results suggest that persistent seizure susceptibility and generalized convulsions cause no remarkable changes in brain monoamine levels, but that monoamines may modify seizure susceptibility. (Author abstract modified)

003246 Owasoyo, J. 0.; Walker, C. A.; Whitworth, U. G. Walker: School of Pharmacy, Florida A&M University, Tallahassee, FL 32307 **Diurnal variation in the dopamine level of rat brain areas: effect of sodium phenobarbital.** Life Sciences (Oxford). 25(2):119-122, 1979.

Levels of dopamine in the caudate nucleus, cerebellum, cortex, and midbrain were determined every 3 hours in control male Sprague-Dawley rats and in rats pretreated with sodium phenobarbital. All animals were adapted for at least 3 weeks to a 12 hour light/12 hour dark cycle. The level of dopamine was highest during the dark phase of the photoperiod in all brain areas studied. Sodium phenobarbital pretreatment increased dopamine in all brain areas at most times, particularly during the dark phase, and enhanced the circadian rhythmicity of dopamine levels in the cortex, cerebellum, and midbrain. 20 references. (Author abstract modified)

003247 Paalzow, Gudrun. Dept. of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, 725 North Wolfe St., Baltimore, MD 21205 **Development of tolerance to the analgesic effect of clonidine in rats. Cross-tolerance to morphine.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(3):231-236, 1978.

The effects of pharmacological alteration of adrenergic transmission on the rate of entrance of dopamine-beta-hydroxylase (DBH) into the circulation were assessed in male Sprague-Dawley rats, using an immunological method in which the kinetics of recovery of serum DBH activity were measured after depletion of the enzyme by treatment with antirat DBH antiserum. Neither alpha-receptor blockade with phenoxybenzamine nor ganglionic blockade with clorisondamine altered the rate at which DBH entered the bloodstream, although both treatments

markedly altered serum catecholamine levels. Prolonged treatment of newborn rats with guanethidine produced a severe peripheral sympathectomy but only a moderate (30%) decrease in serum DBH levels. In sympathectomized rats, the rate of entrance of DBH into the circulation was significantly reduced, but the half-life and rate of degradation were unchanged. Results indicate that the major portion of serum DBH does not enter the circulation by means of exocytotic release of the soluble enzyme. 44 references. (Author abstract)

003248 Palmer, Gene C. Department of Pharmacology, University of South Alabama College of Medicine, Mobile, AL 36688 **Interactions of antiepileptic drugs on adenylate cyclase and phosphodiesterases in rat and mouse cerebrum.** Experimental Neurology. 63(2):322-335, 1979.

Five anticonvulsant agents were tested for ability to modify the activities of adenylate cyclase or cyclic adenosine 3',5'-monophosphate dependent phosphodiesterases in broken cellular preparations of mouse and rat cerebral cortex. In both species, only carbamazepine inhibited the stimulation of cortical adenylate cyclase by catecholamines. Diazepam and clonazepam both enhanced basal and catecholamine stimulated adenylate cyclase, particularly when phosphodiesterase inhibitors were removed from the preparations. Diazepam was more potent than clonazepam and exerted a more pronounced blockade of high and low Michaelis-Menten constant (Km) phosphodiesterase in mouse cerebrum and of calcium dependent, heat stable, activated phosphodiesterase in rat cortex. Phenobarbital inhibited only the low Km phosphodiesterase. Carbamazepine and phenytoin did not inhibit any of the phosphodiesterases. 26 references. (Author abstract modified)

003249 Palmer, Gene C.; Jones, David J.; Medina, Miguel A.; Stavinoha, William B. Dept. of Pharmacology, University of South Alabama College of Medicine, Mobile, AL 36688 **Anticonvulsant drug actions on in vitro and in vivo levels of cyclic AMP in the mouse brain.** Epilepsia (Amsterdam). 20(2):95-104, 1979.

The mechanism of action in four classes of anticonvulsant agents (phenytoin, phenobarbital, carbamazepine, and diazepines) was investigated to determine if there is a common mechanism of action for all four agents regarding their effects on cyclic adenosine 3,5-monophosphate (AMP) in the mouse brain. Injections of pentylenetetrazol in mice produced a rise in steady state levels of cyclic AMP in the cerebrum and cerebellum subsequent to sacrifice One hour pretreatment with anticonvulsant agents prevented this pentylenetetrazol induced rise in cyclic AMP. Anticonvulsant agents that alone depressed steady state levels of cyclic AMP were phenytoin and carbamazepine in the cerebral cortex and carbamazepine in the cerebellum. Elevation in the cyclic nucleotide were evoked by clonazepam in the cerebrum and cerebellum or diazepam and phenytoin in the cerebellum. Under in vitro conditions. the stimulation of cyclic AMP by norepinephrine was blocked by carbamazepine, phenobarbital, and phenytoin. Inhibition of adenosine induced accumulation of cyclic AMP was observed with phenobarbital, carbamazepine, and phenytoin. Ovabain stimulation of cyclic AMP was prevented by carbamazepine, phenytoin, clonazepam, phenobarbital, and diazepam. Only the highest concentrations of phenytoin, phenobarbital, and carbamazepam reduced the action of KCl on cyclic AMP elevation. Clonazepam and diazepam elevated the basal levels of the cyclic nucleotide. 35 references. (Author abstract modified)

003250 Pandey, Bhagwan R.; Parmar, Surendra S.; Kumar, Sushil; Brumleve, Stanley J. Dept. of Physiology, University of North Dakota, School of Medicine, Grand Forks, ND **Anticonvulsant activity and selective inhibition of NAD-dependent oxidations by 1,2,4-trisubstituted-5-imidazolones.** Pharmacology (Basel). 16(6):344-348, 1978.

Nine 1-(3,4-dimethoxyphenylethyl)-2-methyl-4-(substituted benzylidene)-5-imidazolones were synthesized; characterized by their sharp melting points, elemental analyses, and infrared spectra; and evaluated for anticonvulsant activity. All 1,2,4-trisubstituted-5-imidazolones (100mg/kg ip) possessed anticonvulsant activity; the degree of protection against pentylenetetrazol-induced convulsions in mice ranged from 20-60%. These 1,2,4-trisubstituted-5-imidazolones selectively inhibited in vitro oxidation of the nicotinamide adenine dinucleotide (NAD) dependent oxidation of pyruvate, alpha-ketoglutarate, and NADH, but did not alter with NAD independent oxidation of succinate. The anticonvulsant activity of these compounds was unrelated to their ability to selectively inhibit respiratory activity in rat brain homogenates. 9 references. (Author abstract modified)

003251 Pappas, Conrad T. E.; Diamond, Marian C.; Johnson, Ruth E. Dept. of Physiology and Anatomy, University of California, Berkeley, CA 94720 **Morphological changes in the cerebral cortex of rats with altered levels of ovarian hormones.** Behavioral and Neural Biology. 26(3):298-310, 1979.

The relationship between sex steroid hormones and cerebral cortical structure of rats was studied. Long-Evans female rats ovariectomized at day 1 postnatally, and sacrificed at day 90, developed a thicker cerebral cortex in some regions when compared with sham ovariectomized littermates. A 12% increase in neuron soma size and a 6% increase in neuron nuclear size were found in cortical layers II to VI in Area 4 of ovariectomized rats compared to the controls. Ovariectomized day 1 female rats were given daily injections of ethinylestradiol from day 40 to day 90. The cortical thickness in the ethinylestradiol treated rats was thinner than that in the sham ovariectomized littermates. Area 18 showed the greatest difference (6%), while Area 10 showed no significant difference. Area 4 was in between these, with a 4% difference. Neuron perikaryal density packing in Area 4 increased in the ethinylestradiol treated animals by 19% when compared to controls. In a third experiment, ovariectomized rats treated daily with progesterone showed a thicker cortex when compared with the sham ovariectomized controls. Area 4 was responsive with a 3% difference. Differences in the range of 3% to 5% were also found in other motor, sensory, and visual areas. Thus, estrogen appears to reduce cortical dimensions, while progesterone appears to have a slight stimulatory effect under the present experimental conditions. 26 references. (Author abstract modified)

003252 Pedigo, Norman W.: Ling, Nicholas C.; Reisine, Terry D.; Yamamura, Henry I. Department of Pharmacology, College of Medicine, University of Arizona Health Sciences Center, Tucson, AZ 85724 **Examination of des-tyrosine1-gamma-endorphin activity at 3H-spiroperidol binding sites in rat brain.** Life Sciences (Oxford). 24(18):1645-1649, 1979.

To define the possible mechanism of the neuroleptic activity of the gamma-endorphin analogue, des-tyrosinel-gamma-endorphin (DTgE), DTgE was tested for its ability to affect the binding of tritiated spiroperidol in male Sprague-Dawley rat corpus striatum, frontal cortex, and nucleus accumbens/olfactory tubercle. Even at final assay concentrations as high as 100mcM, CTgE was unable to alter 3H-spiroperidol binding in any region studied. This inactivity could not be attributed to the degradation of the peptide during incubation. Results indicate that DTgE does not act at the neuroleptic receptor labeled by 3H-spiroperidol, as do the classical and atypical neuroleptics. It is suggested that DTgE may represent a new class of drugs with antipsychotic properties unlike other known neuroleptic agents. 13 references. (Author abstract modified)

003253 Pelham, Russell W.; Munsat, Theodore L. Laboratory of Molecular Neurology, Department of Neurology, Tufts-New England Medical Center Hospital, Boston, MA **Identification of direct competition for, and indirect influences on, striatal muscarinic cholinergic receptors: in vivo (3H-quinuclidinyl benzilate binding in rats.** Brain Research (Amsterdam). 171(3):473-480, 1979.

The binding of tritiated quinuclidinyl benzilate (QNB) and its displacement by various drugs were examined in male Sprague-Dawley rats in vivo. Results indicate that QNB binds to specific muscarinic receptors in striatum. The binding was saturable and could be displaced by muscarinic drugs. Clozapine and thioridazine both displaced QNB via direct competition for th receptors, while several other neuroleptics did not. Morphine and amphetamine increased QNB binding by indirect influences on muscarinic receptors. 16 references. (Author abstract modified)

003254 Perry, Thomas L.; Kish, Stephen J.; Hansen, Shirley. Dept. of Pharmacology, University of British Columbia, Vancouver, B.C., Canada V6T 1W5 **Gamma-vinyl GABA: effects of chronic administration on the metabolism of GABA and other amino compounds in rat brain.** Journal of Neurochemistry (Oxford). 32(6):1641-1645, 1979.

The effects of chronic subcutaneous treatment with a new irreversible inhibitor of gamma-aminobutyric acid aminotransferase (GABA-T) were studied. Injections of gamma-vinyl-GABA (4-amino-hex-5-enoic acid, 100mg/kg/day for 11 days) produced a 150% increase in brain GABA content, along with marked increases in beta-alanine and homocarnosine contents, in female Wistar rat brain. Brain GABA-T activity was reduced by 26% and glutamic acid decarboxylase activity was reduced by 22%. Gamma-vinyl-GABA also caused a marked increase in hypotaurine content and significant decreases in glutamine and threonine levels in rat brain. Since gamma-vinyl-GABA apparently affects several brain enzymes other than GABA-T, it may not be an ideal drug for elevating brain GABA levels in humans. 26 references. (Author abstract modified)

003255 Peyton, J. C.; Borowitz, J. L. Dept. of Pharmacology and Toxicology, School of Pharmacy, Purdue University, West Lafayette, IN 47907 **Chlordiazepoxide and theophylline after calcium levels in subcellular fractions of rat brain cortex.** Proceedings of the Society for Experimental Biology and Medicine. 161(2):178-182, 1979.

Drug-induced changes in rat brain calcium were studied. Forty-five minutes after i.p. injection of chlordiazepoxide, vesicles from rat brain cortical synaptosomes contained significantly less calcium per unit protein than controls. By contrast, a relatively high dose of chlorpromazine failed to change calcium content in rat brain cortical subfractions. A high dose of theophylline increased calcium in both vesicles and mitochondria isolated from rat brain cortical synaptosomes. It is suggested that chlordiazepoxide and high doses of theophylline may influence calcium mediation of transmitter secretion in brain cortex by effects on calcium transfer mechanisms. 12 references. (Author abstract modified)

003256 Pickles, Hilary G. Clinical Pharmacology Unit, National Hospital, Queen Square, London WC1N 3BG, England **Presynaptic gamma-aminobutyric acid responses in the olfactory cortex.** British Journal of Pharmacology (London). 65(2):223-228, 1979.

Gamma-aminobutyric acid (GABA) produced a dose related depolarization of the lateral olfactory tract in slices of rat olfactory cortex. Muscimol and 3-aminopropranesulphonic acid were more potent depolarizing agents than GABA, whereas taurine and glycine were less potent. Carbachol and glutamate were virtually ineffective. The GABA responses were at least partially dependent on chloride ions. Depolarizations induced by GABA, but not by glycine, were antagonized by ()-bicuculline and by high concentrations of strychnine. However, responses to high doses of GABA were sometimes potentiated by both bicuculline and strychnine. It is suggested that GABA receptors may occur as widely on nerve terminals as they do postsynaptically in the CNS. 26 references. (Author abstract modified)

003257 Pilc, Andrzej; Nowak, Jerzy, Z. Institute of Pharmacology, Polish Academy of Science, 31-343 Krakow, 12 Smetna Str., Poland **Influence of histamine on the serotonergic system of rat brain.** European Journal of Pharmacology (Amsterdam). 55(3):269-272, 1979.

Intraventricularly injected histamine or 4-methylhistamine reduced the levels of serotonin and increased those of 5-hydroxyindoleacetic acid in the hypothalamus of normal Wistar rats. In animals pretreated with tranylcypromine, the compounds induced head twitches which could be blocked by antiserotonin agents. An agonist of histamine H1-receptors, 2-pyridylethylamine, neither influenced serotonin level nor evoked behavioral changes. It is concluded that histamine may release serotonin from the hypothalamus, thereby producing behavioral changes. 20 references. (Author abstract modified)

003258 Pinnock, Robert D.; Woodruff, Geoffrey N.; Turnbull, Michael J. Dept. of Physiology and Pharmacology, University of Southampton, Bassett Crescent East, Southampton S09 3TU, England **Sulpiride blocks the action of dopamine in the rat substantia nigra.** European Journal of Pharmacology (Amsterdam). 56(4):413-414, 1979.

Extracellular recordings were obtained from spontaneously active neurons in the female Wistar rat substantia nigra following microiontophoretic application of dopamine or sulpiride. In 10 dopamine sensitive cells examined, dopamine depressed firing without altering spike height. This inhibitory action of dopamine was blocked by continuous application of sulpiride; the blocking action was apparent within 2-4 minutes of application and was reversible. These results indicate that sulpiride is a potent antagonist of the physiological response to dopamine in single units in the substantia nigra. 5 references.

003259 Pinto, John; Wolinsky, Marcie; Rivlin, Richard S. Department of Medicine, College of Physicians and Surgeons, Columbia University, New York, NY 10032 **Chlorpromazine antagonism of thyroxine-induced flavin formation.** Biochemical Pharmacology (Oxford). 28(5):597-600, 1979.

The effects of chlorpromazine on flavin adenine dinucleotide formation and on the covalent binding of flavins to tissue proteins were examined in adult male Holtzman rats. The results show that chlorpromazine inhibits flavin formation from riboflavin both in vitro and in vivo. In addition, this drug markedly blunts thyroxine enhancement of riboflavin incorporation into flavins; both observations being made at concentrations of chlorpromazine commonly used clinically. It is concluded that chlorpromazine is a riboflavin antagonist and inhibits effects of thyroxine upon riboflavin metabolism. 33 references. (Author abstract modified)

003260 Placheta, P.; Singer, E.; Schonbeck, G.; Heckl, K.; Karobath, M. Institute of Pharmacology, University of Vienna, Vienna, Austria **Reduction of endogenous level, uptake and release of taurine after intrastriatal kainic acid injection.** Neuropharmacology (Oxford). 18(4):399-402, 1979.

In Sprague Dawley rats given a single unilateral injection of -kainic acid into the left caudate nucleus 10 days prior to sacrifice, a significant reduction of endogenous taurine levels and of

high affinity uptake of 3H-taurine into crude synaptosomal (P2) fractions (to about 75% of control values) was found on the lesion side. A marked reduction of endogenous gama-aminobutyric acid (GABA) levels and 14C-GABA uptale into P2 fractions was also observed. Tritiated dopamine uptake was not significantly altered. In superfusion experiments with prelabeled P2 fractions prepared form lesioned striata, potassium (56mM) induced release of 3H-taurine and 14C-GABA, but not of 3H-dopamine, was reduced. These results are compatible with the hypothesis that taurine in the rat striatum in partially localized in interneurons. 23 references. (Author abstract modified)

003261 Polzin, Robert L.; Barnes, Charles D. Division of Allied Health & Life Sciences, The University of Texas, San Antonio, TX 78285 **Effect of diazepam on GABAergic cuneate neurons.** Neuropharmacology (Oxford). 18(4):431-434, 1979.

Iontophoretic application of diazepam or gamma-aminobutyric acid (GABA) inhibited spontaneously firing neurons in the cat cuneate nucleus. Nonspontaneously firing neurons, excited by iontophoresis of glutamate, were inhibited by GABA or diazepam. When diazepam and GABA were applied simultaneously, only inhibition was seen. The inhibition of spontaneously firing neurons by GABA or diazepam was blocked by concurrent iotophoresis of bicuculline or picrotoxin, which are both GABA antagonists. Results support a positive interaction of diazepam with the GABA inhibition of single neurons in the cuneate nucleus and provide no evidence for antagonism between GABA and diazepam. 12 references. (Author abstract modified)

003262 Porsche, E.; Stefanovich, V. Hoechst Aktiengesellschaft, Frankfurt am Main, Werk Albert, D-6200 Wiesbaden 12, Germany **Concerning the influence of pentifylline and theophylline on the reaction kinetic of rat brain ATPase stimulated by norepinephrine.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R68, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of pentifylline and theophylline on rat brain sodium ion (Na), potassium ion (K), magnesium ion (Mg2) stimulated adenosine triphosphatase (ATPase) activity in vitro are reported. Pentifylline inhibited catecholamine sensitive ATPase in a dose dependent manner, whereas theophylline was without effect. Pentifylline also inhibited the Mg2 dependent portion of Na/K/Mg2-ATPase. Synaptosomal ATPase was significantly more sensitive to pentifylline at a high concentration of potassium than at low concentrations, but changes in the Na/K ratio in the incubation medium had no effect. Theophylline had virtually no effect on the kinetic reaction on Na/K ATPase. (Author abstract modified)

003263 Powers, J. M.; Mann, G. T.; Jones, R.; Ward, J. W.; Elsea, J. R.; Smith, H. M. Department of Pathology, Medical University of South Carolina, Charleston, SC 29403 **A reassessment of the significance of dark neurons in serotonergic cell groups.** Neuropharmacology (Oxford). 18(4):383-389, 1979.

To determine the significance of dark neurons in serotonergic cell groups, Sprague-Dawley and Holtzman rats were injected i.p. with fenfluramine (1.0-31.6mg/kg), reserpine (5mg/kg), methamphetamine (10mg/kg), and p-chloramphetamine (10mg/kg). Midbrain sections were studied by two histologic techniques. Hyperchromatic and argyrophilic (dark) neurons were seen in all treated animals as well as in saline treated controls. These changes were seen less frequently in frozen sections and were not associated with neuronal loss or with glial reaction except in a few rats treated with p-chloramphetamine. These findings indicate that dark neurons are artifacts and are not indicative of pathological change. 15 references. (Author abstract modified)

003264 Preskorn, Sheldon H.; Hartman, Boyd K. Dept. of Psychiatry, University of Kansas Medical Center, 39th and Rainbow Blvd., Kansas City, KS 66103 **The effect of tricyclic antidepressants on cerebral fluid dynamics.** Biological Psychiatry. 14(2):235-250, 1979.

Studies to assess the effects of tricyclic antidepressants on cerebral capillary permeability and flow by quantitating changes in the extraction fraction of water (Ew) were conducted. Amitriptyline and nortriptyline produced significant increases in Ew for the total forebrain while protriptyline had no effect on Ew. The amitriptyline-induced increase in Ew occurred at doses which produced plasma levels near the range defined as therapeutic in depression studies. The magnitude of the effect was similar for both amitriptyline and nortriptyline representing a 35% to 40% increase over control levels. It is reported that the effects were uniformly observed throughout the forebrain, rostral telencephalon, caudal telencephalon, and diencephalon of the rat. 20 references. (Author abstract modified)

003265 Przewlocki, R.; Duka, T.; Herz, A. Max-Planck-Institut fur Psychiatrie, Abteilung Neuropharmakologie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Changes in rat endorphin levels after chronic morphine treatment.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R67, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of morphine on pituitary, plasma, and brain levels of endorphins in rats are reported. Morphine (10mg/kg) and naloxone (10mg/kg) had no effect on beta-endorphin immunoreactivity (beta-EI) in plasma or tissues, but 50mg/kg morphine produced a two-fold increase in beta-EI in plasma. Subcutaneous implantation of 75mg morphine pellets (six in 10 days) did not alter beta-EI levels in plasma, pituitary, or hypothalamus. In morphine tolerant rats, naloxone precipitated withdrawal led to a three-fold enhancement of beta-EI levels in plasma, accompanied by a significant reduction of beta-EI in the anterior lobe of the pituitary and in the hypothalamus. Long-term administration of morphine (27 pellets in 1 month) caused a significant reduction (about 60% of beta-endorphin content in the intermediate/posterior lobe of pituitary), without changing the beta-EI level in the anterior lobe; this was accompanied by a decrease in beta-EI in midbrain and septum and a decrease in the met-enkephalin content of striatum and the intermediate/posterior lobe of pituitary. (Author abstract modified)

003266 Przewlocki, Ryszard; Hollt, Volker; Voigt, Karl H.; Herz, Albert. Institute of Pharmacology, Polish Academy of Sciences, Cracow, Poland **Modulation of in vitro release of beta-endorphin from the separate lobes of the rat pituitary.** Life Sciences (Oxford). 24(17):1601-1607, 1979.

The rate of in vitro release of beta-endorphin immunoreactivity from the anterior lobe of male Sprague-Dawley rat pituitary increased in response to hypothalamic extract and lysine vasopressin. At a low concentration, lysine vasopressin initiated a 5-6-fold, dose dependent, parallel increase in the release of beta-endorphin and adrenocorticotrophic hormone from the anterior lobe. Corticosterone suppressed this stimulated release, but had no effect on basal release. The stimulants did not alter the rate of release from the intermediate/posterior lobe. Chromatography of incubation media showed that beta-endorphin and beta-lipotrophin were released in parallel from the anterior (obe). Whereas only beta-endorphin was released from intermediate/posterior lobe tissue. These findings suggest that the beta-endorphin pools in anterior and intermediate lobes differ both in

their mechanism of release and in the regulation of this process. 20 references. (Author abstract modified)

003267 Puget, Alain; Cros, Jean; Meunier, Jean-Claude. Laboratoire de Pharmacologie, Centre National de la Recherche Scientifique, 205 Route de Narbonne, F-31078 Toulouse Cedex, France **The natural tolerance of the afghan pika (Ochotona refescens) to morphine.** European Journal of Pharmacology (Amsterdam). 53(4):343-349, 1979.

The mechanism underlying the abnormal opiate response of the afghan pika (ochotona refuscens) was analyzed. Subcutaneous injection of morphine in doses up to 50mg/100mg (250 times the median effective dose in rat) had no effect in the pika. The pika was responsive to synthetic opiates such as etorphine, pentazocine, and phenoperidine, and morphine antagonized the opiate response elicited by these drugs. Morphine entered the pika brain as readily as the rat brain. Opiate receptor sites were present in normal amounts in pika brain and had high affinity for tritiated etorphine, naloxone, and morphine. Binding of morphine to pika brain homogenates was inhibited in the presence of sodium ions, indicating that the antagonism of phenoperidine action by morphine does not occur at the opiate receptor site. It is suggested that the pika's natural tolerance to morphine may involve molecular events that normally preceed (metabolism) or follow (enzyme activation) the interaction between the drug and its specific recognition sites. 21 references. (Author abstract modified)

003268 Quik, M.; Emson, P. C.; Fahrenkrug, J.; Iversen, L. L. MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Medical School, Hills Road, Cambridge CB2 2QD, England **Effect of kainic acid injections and other brain lesions on vasoactive intestinal peptide (VIP)-stimulated formation of cAMP in rat brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 306(3):281-286, 1979.

The effects of various brain lesions on the vasoactive intestinal peptide (VIP) induced accumulation of cyclic adenosine monophosphate (cAMP) in male Sprague-Dawley rat brain slices were examined. Intranigral injection of 6-hydroxydopamine (6-OHDA), which leads to degeneration of dopamine nerve terminals in the striatum, or intrastriatal injection of kainic acid, which destroys striatal neurons, reduced VIP-induced cAMP accumulation in striatal slices by 60%. Cortical ablation, which leads to degeneration of corticostriatal fibers, had no effect. Knife cut lesions transecting the stria terminalis, which destroy afferent fibers to the amygdala, decreased the VIP induced increase in cAMP in amygdala slices by 40%, while kainic acid injection into the amygdala had no effect. Kainic acid injection into several other brain regions (including hippocampus, cortex, and hypothalamus) also failed to affect the VIP elicited increase in cAMP in slices. The entire sequence of VIP was necessary for full activity. Results suggest that VIP may be involved in neuromodulation or neurotransmission in the striatum or nigrostriatal pathway, as well as in the stria terminalis from the bed nucleus to the amygdala. 48 references. (Author abstract modified)

003269 Quik, Maryka; Iversen, Leslie L. Iversen: MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Medical School, Hills Road, Cambridge, England **Regional study of 3H-spiperone binding and the dopamine-sensitive adenylate cyclase in rat brain.** European Journal of Pharmacology (Amsterdam). 56(4):323-330, 1979.

Tritiated spiperone binding was determined in homogenates of various regions of rat brain in the presence of 2-amino-6,7-dihydroxytetralin (ADTN), a rigid dopamine analog; cinanserin, a 5-hydroxytryptamine (5-HT) blocker; and ()-butaclamol, a neuroleptic drug with high affinity for both dopamine and 5-HT receptors. ADTN was a potent displacer of 3H-spiperone in striatum; was less effective in the olfactory tubercle, substantia nigra, and hypothalamus; and displaced 3H-spiperone from hippocampus and several cerebral cortical regions only at concentrations greater than 10mcM. The regional effects of cinanserin in inhibiting 3H-spiperone binding were essentially the converse of those observed for ADTN. In contrast, ()-butaclamol displaced 3H-spoperone in regions with poor dopaminergic innervation almost as effectively as in regions with rich innervation. The effects of ADTN and cinanserin in combination were similar to those of ()-butaclamol or high concentrations of dopamine, suggesting that spiperone binds to both 5-HT and dopamine receptors. ADTN displaceable 3H-spiperone binding did not correlate well with dopamine stimulated adenylate cyclase activity, suggesting that the 3H-spiperone receptor and dopamine sensitive adenylate cyclase constitute two different dopamine receptor populations. 25 references. (Author abstract modified)

003270 Racagni, Giorgio; Bruno, F.; Iuliano, E.; Paoletti, R. Via Andrea Del Sarto 21, 20129 Milan, Italy **Differential sensitivity to morphine-induced analgesia and motor activity in two inbred strains of mice: behavioral and biochemical correlations.** Journal of Pharmacology and Experimental Therapeutics 209(1):111-116, 1979.

The behavioral and biochemical effects of morphine were examined in male inbred mice of the C57BL/6J and DBA/2J strains. Morphine elicited an increase in locomotor activity in C57 but not in DBA mice and produced analgesia in DBA but not in C57 mice. Levels of 3-methoxytyramine and cyclic 3',5'-monophosphate (AMP) in the striatum were increased in C57 strain after morphine, and this increase could be reversed by haloperidol or nalextrone. DA release and cyclic AMP were not increased in the DBA mice after morphine. Cerebellar cyclic guanosine 3',5'-monophosphate concentrations increased in the C57 strain and decreased in the DBA strain after morphine. 40 references. (Author abstract modified)

003271 Raiteri, M.; Cerrito, F.; Cervoni, A. M.; del Carmine, R.; Ribera, M. T.; Levi, G. Institute of Pharmacology, Catholic University, Rome, Italy **Studies on dopamine uptake and release in synaptosomes.** Advances in Biochemical Psychopharmacology. 19:35-56, 1978.

Recent studies of dopamine (DA) transport in synaptosomes isolated from the corpus striatum are summarized. Superfusion studies showed that amphetamine and high potassium released newly taken up and newly synthesized DA from striatal synaptosomes, while nomifensine appeared to act as a pure DA uptake inhibitor. The potency of phenylethylamine derivatives as uptake inhibitors or stimulators of DA release varied profoundly with structure, and a good parallelism was found between changes in releasing activity and uptake inhibition potency. Alterations of the sodium ion gradient across the synaptosomal membrane induced by omission of extracellular sodium or by ouabain, enhanced the carrier mediated nomifensine sensitive release of DA. Depolarization of synaptosomes by high potassium triggered the release of both newly taken up and newly synthesized DA, and this release was largely calcium dependent. Studies of the effects of apomorphine and neuroleptics on the stimulus coupled release of DA did not support the existence of a presynaptic receptor mediated inhibitory control of DA release similar to that observed for norepinephrine. 90 references. (Author abstract modified)

003272 Ramanujam, V. M. Sadagopa; Trieff, Norman M. Dept. of Preventive Medicine and Community Health, University of Texas Medical Branch, Galveston, TX 77550 **Structure activity**

relation for some 1,4-benzodiazepinones: correlation between rate constants for reduction by sodium borohydride and antileptazol ED50. Journal of Pharmacy and Pharmacology (London). 30(9):542-546, 1978.

The establishment of significant correlation in 11 different 1,4-benzodiazepinones between log k2 (the second order rate constant for the reduction of the azepinones by sodium borohydride) and their ED50 against leptazol-induced seizures in mice is reported. Results suggest a possible involvement of the carbonyl group at the receptor site. It is possible that the transition state between the azepinone and the receptor is similar to the transition state occurring in the borohydride reduction of the azepinone. 38 references. (Author abstract modified)

003273 Rapoport, Stanley I.; Ohno, Kikuo; Pettigrew, Karen D. Laboratory of Neurosciences, NIA, Gerontology Research Center, Baltimore City Hospitals, Baltimore, MD 21224 **Blood-brain barrier permeability in senescent rats.** Journal of Gerontology. 34(2):162-169, 1979.

Cerebrovascular permeability to labeled sucrose was measured in 3 and 28 month old conscious, restrained Fischer 344 male rats. Tracer was intravenously injected and arterial plasma concentrations were followed for 50 to 240 min, when animals were killed and regional brain radioactivity was measured. Equations derived by a two compartment diffusion model were fitted to concentration data to estimate product of cerebral capillary permeability and surface area (PA) and cerebral distribution space of labelled sucrose (Ve). PA in 3-month-old rats averaged 7.53 x 10-6 sec-1 in 14 cerebral regions, and was not significantly elevated in 28-month-old animals, except possibly at white matter. Ve fell from an average of 0.126 in control rats to 0.07 in senscent rats. This 45% reduction may reflect a reduced extracellular space in the older animals. Findings do not support the hypothesis that aging of the central nervous system is related to a breakdown of the blood/brain barrier. 44 references. (Author abstract)

003274 Rastogi, R. B.; Lapierre, Y. D.; Singhal, R. L. Department of Pharmacology, University of Ottawa, Ottawa, Ontario, Canada **Diazepam modifies L-triiodothyronine-stimulated changes in behaviour and the metabolism of brain norepinephrine, dopamine and 5-hydroxytryptamine -- a possible mechanism of action.** Journal of Psychiatric Research (Oxford). 15(1):7-20, 1979.

The neuronal mechanisms underlying anxiolytic action of diazepam (DZP) in the brains of neonatal hyperthyroid rats were studied. When DZP was administered to both normal and hyperthyroid rats over a 15 day period, both groups showed decreased locomotor activity and enhanced norepinephrine levels. Dopamine levels rose in normal rats but fell in hyperthyroid rats. The influence of chronic DZP was also examined on the 5-hydroxytryptaminergic system of the rat brain. In view of the demonstrated role of 5-hydroxytryptamine in anxiety, it is postulated that the enhanced synthesis and release of this indoleamine in rats with L-triiodothyronine induced hyperthyroidism might be associated with anxiety observed clinically in hyperthyroidism patients. Furthermore, since chronic DZP treatment was shown to diminish motor performance as well as the overall turnover of norepinephrine and 5-hydroxytryptamine in the brain, it is suggested that this psychotropic drug may elicit its anxiolytic and tranquilizing properties by influencing these brain monoamines. 47 references.

003275 Reisine, Terry D.; Nagy, James I.; Fibiger, Hans C.; Yamamura, Henry I. Department of Pharmacology, University of Arizona Health Sciences Center, Tucson, AZ 85724 **Localization of dopamine receptors in rat brain.** Brain Research (Amsterdam). 169(1):209-214, 1979.

To determine the neuronal localization of the dopamine (DA) receptor labeled by spiroperidol, male Wistar rats were given 6-hydroxydopamine (6-OHDA) lesions of the nigrostriatal pathway (NSP) kainic acid (KA) lesions of the striatum. After the 6-OHDA lesion, striatal glutamic acid decarboxylase (GAD) activity was significantly increased, while striatal and nigral tyrosin hydroxylase (TH) activity were nearly abolished. The KA lesions resulted in decreases in striatal GAD, TH, and choline acetyltransferase, as well as in nigral GAD activity. Striatal (3H)spiroperidol binding increased following destruction of the NSP, while binding in the substantia nigra decreased. The KA lesion of the striatum had no effect on (3H)spiroperidol binding in the substantia nigra. Results suggest that the spiroperidol binding site in the substantia nigra is located on nigral DA containing cells and is not associated with DA sensitive adenylate cyclase. 23 references.

003276 Resnick, Steven I.; Hernandez, Luis; Chen, Joseph; Hoebel, Bartley G. Dept. of Psychology, Princeton University, Princeton, NJ 08540 **Effect of the anorectic drug, phenylpropanolamine, on blood glucose in rats.** Pharmacology (Basel). 17(3):157-162, 1978.

The hypoglycemic effects of intraperitoneally administered phenylpropanolamine hydrochloride (PPA) were examined in female Sherman rats to determine if the drug's anorectic properties stem from effects on glucostatic mechanisms. PPA tended to lower blood glucose levels in normal rats; the glycemia reducing effect was larger and statistically significant in rats made hyperglycemic by prior treatment with streptozocin to cause diabetes. Results indicate that PPA may reduce feeding by increasing blood sugar utilization. 13 references. (Author abstract modified)

003277 Robert, T. A.; Daigneault, E. A.; Hagardorn, A. N. Dept. of Pharmacology, East Tennessee State University College of Medicine, P. O. Box 19810A, Johnson City, TN 37601 **Relationship between fluphenazine plasma concentration and electroencephalographic alterations.** Communications in Psychopharmacology. 2(6):467-474, 1978.

Plasma drug levels and EEG data from five adult male dogs were collected at discrete intervals 1 day before and 2 days after single oral doses (25mg/kg) of fluphenazine dihydrochloride (FLZ). Maximum plasma drug concentration (1.41mcg/ml) was observed 4 hours after FLZ; thereafter, a biphasic exponential decline through 48 hours after FLZ was noted. Power spectral frequency analysis of the EEG data revealed frequency changes in all subjects after FLZ. Linear regression calculations of the plasma drug concentration against EEG frequency shifts at each of six sampling periods after FLZ produced a correlation coefficient of 0.910. 10 references. (Author abstract modified)

003278 Roberts, Michelle M.; Patrick, Robert L. Patrick: Neuroscience Section, Box G, Brown University, Providence, RI 02912 **Amphetamine- and phenylethylamine-induced alterations in dopamine synthesis regulation in rat brain striatal synaptosomes.** Journal of Pharmacology and Experimental Therapeutics 209(1):104-110, 1979.

Amphetamine, phenylethylamine, and veratridine stimulated dopamine synthesis in male Sprague-Dawley rat brain striatal synaptosomes via a calcium and tyrosine dependent mechanism. The stimulation produced by maximally stimulating concentrations of amphetamine or phenylethylamine was not additive to that produced by veratridine. These findings suggest that the three agents share a common site of action in stimulating dopamine synthesis. Differences in exact modes of action were observed, however: veratridine inhibited tyrosine uptake while am-

phetamine did not, and tetrodotoxin completely blocked the stimulation produced by veratridine but not by amphetamine. These results suggest that amphetamine and veratridine share a common mode of action at a calcium dependent step subsequent to veratridine depolarization. At high concentrations, amphetamine and phenylethylamine lost their ability to stimulate dopamine synthesis and antagonized veratridine induced synthesis stimulation. 27 references. (Author abstract modified)

003279 Roberts, P. J.; Davis, A. Pharmacology Group, School of Biochemical and Physiological Sciences, Southampton, Southampton S09 3TU, England **ADTN (2-amino-6,7-dihydroxy 1,2,3,4 tetrahydronaphthalene): a prototype for possible dopaminergic false transmitters?** Advances in Biochemical Psychopharmacology. 19:177-191, 1978.

Studies of the synaptosomal uptake, release, and binding of 2-amino-6,7-dihydroxy-1,2,3,4-tetrahydronaphthalene (ADTN), a semirigid analogue of dopamine (DA) held in the extended form, are described. Pharmacological studies showed that ADTN is at least as potent as DA and is much more stable metabolically. ADTN was actively accumulated into nerve terminals, particularly in the striatum, and was potently inhibited by agents that interfere with the high affinity transport of DA. Following accumulation, labeled ADTN was released into the incubation medium in response to depolarizing stimuli, amphetamine, nomifensine, benztropine, or the calcium ionophore A23187. Binding studies suggested that ADTN binds to specific sites that can accommodate both ADTN and DA. Results suggest that ADTN acts as a false transmitter for DA. It is suggested that ADTN may be an ideal chemotherapeutic agent for the treatment of Parkinson's disease if the molecule can be modified to enable it to cross the blood-brain barrier. 29 references.

003280 Rogawski, Michael A.; Roth, Robert H.; Aghajanian, George K. Dept. of Pharmacology, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510 **Melatonin: deacetylation to 5-methoxytryptamine by liver but not brain aryl acylamidase.** Journal of Neurochemistry (Oxford). 32(4):1219-1226, 1979.

In a study of the deacetylation of melatonin to 5-methoxytrptamine (5-MT), rat liver and brain slices were incubated in vitro with (3H)melatonin. Liver slices synthesized small amounts of (3H)5-smethoxyindoleacetic acid (3H)5-MIAA along with other melatonin metabolites, including 6-hydroxymelatonin. Pretreatment of animals prior to killing with the irreversible monoamine oxidase inhibitor pargyline allowed (3H)5-MT to be recovered from the incubation. Liver aryl acylamidase was able to utilize (3H)melatonin as a substrate to produce (3H)5-MT. Brain aryl acylamidase did not generate any detectable (3H)5-MT nor was it inhibited by melatonin. Results suggest that 5-MT is not formed in brain from melatonin, although trace amounts of 5-MT in the periphery could be derived from this precursor. 42 references. (Author abstract modified)

003281 Rosenfeld, J. Peter; Holzman, Bradley S. Cresap Neuroscience Laboratory, Dept. of Psychology, Northwestern University, Evanston, Chicago, IL 60201 **Effects of morphine on medial thalamic and medial bulboreticular aversive stimulation thresholds.** Brain Research (Amsterdam). 150(2):436-440, 1978.

The effects of morphine on Holtzman rat medial thalamic and medial bulboreticular aversive stimulation thresholds are described in an investigation of a descending inhibitory model of opiate analgesia effects. The descending inhibitory model of opiate analgesia posits that opiates or analgesic brain stimulation activate a brain structure which projects descending inhibition of nociceptive transmission at the primary to secondary afferent connections. If this descending inhibitory model is the exclusive opiate analgesia mechanism, then no aversive brain stimulation effects above the trigeminal nucleus should be affected by morphine. Results support the descending inhibitory model of opiate analgesia with exclusive action at primary to secondary synaptic areas. 17 references.

003282 Roth, Sheldon H.; Williams, Peter J. Divison of Pharmacology and Therapeutics, Faculty of Medicine, University of Calgary, 2920 24th Avenue NW, Calgary, Alberta, Canada T2N 1N4 **The non-specific membrane binding properties of delta9-tetrahydrocannabinol and the effects of various solubilizers.** Journal of Pharmacy and Pharmacology (London). 31(4):224-230, 1979.

The binding of tritiated delta9-tetrahydrocannabinol (THC) to crude and purified male Sprague-Dawley rat brain synaptosomal membranes suspended in Krebs solution or in 10mM sodium phosphate buffer was examined. Binding was similar in both suspending media and to both crude and purified synaptosomal membranes. The solubilizing agent Cremophor E.L. decreased the partition coefficient by 50% at 8mcg/ml and by more than 99% at 0.4mg/ml. A nonspecific interaction with neuronal membranes was observed, suggesting that THC may exert some of its effects by a mechanism analogous to that of the general anesthetics. 33 references. (Author abstract modified)

003283 Saavedra, J. M. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Brain stem adrenaline in genetic and experimental hypertension in the rat. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 9 p.

The hypothesis that there is an involvement of the brainstem adrenaline neurons (localized in the A1 and A2 areas, the area postrema and the locus coeruleus) in the development of several types of hypertension in the rat was tested in the development of spontaneously (genetic) hypertensive rats (SHR) and experimentally (DOCA salt) induced hypertensive rats. In young (4 weeks old) SHR, adrenaline levels were decreased, and the activity of the adrenaline forming enzyme, phenylethanolamine-N-methyltransferase (PNMT), was increased in selective brain stem areas related to cardiovascular control. In adult (14 weeks old) SHR, no significant changes in either adrenaline nor PNMT were detected in the brainstem. In the DOCA salt hypertensive rats, similar increases in activity were noted in selective brainstem areas. These changes were present after 2 weeks of treatment, and were more extensive after prolonged (9 weeks) DOCA salt treatment. Adrenaline levels were found changed in DOCA salt treated rats only after 9 weeks of treatment. In contrast with the decreased levels found in SHR, adrenaline levels were increased in experimentally-induced hypertension. These results support the hypothesis tested. 12 references. (Author abstract modified)

003284 Saavedra, Juan M. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Participation of adrenaline brain stem neurons in genetic and experimental hypertension. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

The adrenaline content of specific brainstem areas (A1, area postrema, and locus coeruleus) was studied in spontaneously hypertensive (genetic) rats (SHR) and experimentally-induced (DOCA-salt-induced) hypertensive rats. The adrenaline content was decreased early in the development of the SHR. These changes were parallel to increases in the adrenaline forming enzyme, phenylethanolamine-N-methyltransferase (PNMT), and indicated a participation of brainstem adrenaline neurons in the early phase of the essential hypertension in the rat. Alterations in adrenaline levels and PNMT activity in brainstem nuclei were also detected during the early and late stages of the DOCA-salt-induced hypertension, the late changes being more

pronounced. Both types of hypertension could be reversed by the systemic administration of PNMT inhibitors. These observations, and the recent finding of decreased adrenaline content and increased PNMT activity of brainstem areas during acute stress, indicate that brainstem adrenaline could be involved in the pathogenesis of different forms of hypertension and in the regulation of adrenal medullary catecholamine metabolism. (Author abstract)

003285 Saavedra, Juan M. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Adrenaline neurons in the rat brain stem in experimental and genetic hypertension. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

The role of brainstem adrenaline neurons in experimentally-induced (DOCA salt-induced) hypertension and essential (genetic) hypertension in the rat was studied. Specific changes in the concentration of adrenaline were found in localized brainstem nuclei (areas A1 and A2, area postrema, and locus coeruleus) in both forms of hypertension. In DOCA salt hypertensive rats, the changes in adrenaline were more pronounced with prolonged hypertension (10 weeks of treatment). In spontaneously (genetic) hypertensive rats, the changes were restricted to the early phase of the development of the hypertension, and did not occur in adult animals. These results implicate brainstem adrenaline neurons in the development of genetic hypertension in the rat, as well as in the production and maintenance of the DOCA-salt-induced hypertension, and allow the existence of common central mechanisms to be postulated in both forms of hypertension. The coexistence of changes in brainstem catecholamines in areas related to the control of adrenal function with changes in the release and metabolism of catecholamines in the adrenal medulla, which are found in both types of hypertension, suggest that brainstem and adrenal adrenaline functions are interrelated. (Author abstract modified)

003286 Salih, Hussein; Panerai, Alberto E.; Friesen, Henry G. Department of Physiology, University of Manitoba, 770 Bannatyne Avenue, Winnipeg, Manitoba, Canada R3E 0W3 **Cellular distribution of beta-endorphin-like substance in the rat pituitary and brain.** Life Sciences (Oxford). 25(2):111-117, 1979.

Beta-endorphin was localized in the cytoplasm of most cells of the intermediate lobe and discrete cells of the anterior lobe of Sprague-Dawley rat pituitary, using immunocytochemistry. The cells of the posterior lobe were negative. Various regions of the rat brain, including some ependymal cells of the third ventricule and discrete cells of the choroid plexus also displayed a granular reaction product. The distribution of the granules in the neurons appeared over the cell bodies, whereas other positive cells displayed an intense reaction product in the cytoplasm. 24 references. (Author abstract modified)

003287 Salles, Khadijeh S. Shahid; Colasanti, Brenda K.; Craig, Charles R.; Thomas, John A. Pharmacology Department, Medical School, Pahlavi University, Shiraz, Iran **Involvement of brain cyclic AMP in the acute and chronic effects of morphine in the rat.** Pharmacology (Basel). 17(3):128-137, 1978.

Incubation of male Sprague-Dawley rat cerebral cortical slices with tritiated adenosine in the presence of various concentrations of morphine in vitro resulted in dose related increase in tritiated cyclic adenosine monophosphate (cAMP) formation. In vivo, the rate of 3H-cAMP formation in cortical slices 45 minutes and 4 hours after subcutaneous administration of 10mg/kg morphine was significantly greater than that for saline controls. A significant enhancement of cortical 3H-cAMP formation was also apparent 72 hours (but not 24 hours) after subcutaneous implantation of two morphine pellets. In similar experiments with hypothalamic tissue, the rate of conversion of 3H-adenosine to 3H-cAMP was not altered by morphine. Administration of exogenous cAMP antagonized the analgesic response to morphine in both nontolerant and tolerant rats and accelerated the development of tolerance to morphine. These results provide further evidence for the role of cAMP in the mediation of the central actions of morphine. 28 references. (Author abstract modified)

003288 Saner, Alphonse; Pletscher, Alfred. Research Division, F. Hoffman-La Roche & Co. Ltd., 4002 Basel, Switzerland **Effect of diazepam on cerebral 5-hydroxytryptamine synthesis.** European Journal of Pharmacology (Amsterdam). 55(3):315-318, 1979.

In the brains of normal and reserpinized Wistar rats, diazepam and amino-oxyacetic acid (AOAA) both decreased the 5-hydroxytryptophan (5HTP) accumulation induced by the decarboxylase inhibitor 3-hydroxybenzylhydrazine (NSD-1015). In reserpinized animals, the action of diazepam was antagonized by picrotoxin and bicuculline in doses that did not themselves influence the NSD-1015-induced rise in 5HTP. It is concluded that diazepam probably depresses 5-hydroxytryptamine synthesis via gamma-aminobutyric acid mediated mechanisms and that this effect is not dependent on functionally intact monoaminergic synaptic transmission. 11 references. (Author abstract modified)

003289 Sano, Kenji; Katsuda, Kimio; Maeno, Hiroo. Department of Pharmacology and Biochemistry, Central Research Laboratories, Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan **Reconstitution of dopamine-sensitive adenylate cyclase from its subunits.** Neurochemical Research. 3(5):674, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The catalytic subunit of dopamine sensitive adenylate cyclase and tritiated dopamine binding protein from the synaptic membrane fractions of canine caudate nucleus were examined. The molecular weight of adenylate cyclase was about 260,000 daltons and that of (3H)dopamine binding protein was about 35,000. The effects of neuroleptics and catecholamines on the kinetic properties of binding were very similar between solubilized and particulate fractions. When adenylate cyclase and (3H)dopamine binding protein were incubated together, dopamine produced a dose dependent increase in enzyme activity. Stimulation of reconstituted adenylate cyclase by dopamine was inhibited by chlorpromazine or haloperidol. It is suggested that (3H)dopamine binding protein is identical to the regulatory subunit of dopamine sensitive adenylate cyclase in the synaptic membrane o the canine caudate nucleus. (Author abstract modified)

003290 Sarthy, P. Vijay; Lam, Dominic M. K. Cullen Eye Institute, Baylor College of Medicine, Houston, TX 77030 **The uptake and release of (3H)dopamine in the goldfish retina.** Journal of Neurochemistry (Oxford). 32(4):1269-1277, 1979.

The uptake and release of (3H)dopamine was studied in the goldfish retina. The following results were obtained: 1) when retinas were incubated for less than 20 min.,most of the label was associated with dopaminergic terminals that contact certain horizontal cells; 2) the uptake could be explained by a single high affinity mechanism; 3) the uptake was temperature dependent, with a temperature coefficient of 1.7; 4) the initial rate of uptake was unaffected by the absence of Ca2 or the presence of Co2; however, more than 85% uptake was blocked in the absence of external Na; 5) a cyanide and iodoacetate combination blocked 70% of uptake; 6) centrally acting drugs benztropine and diphenylpyraline inhibited at least 60% to 70% of (3H)dopamine uptake; 7) and (3H)dopamine in the retina could be released by increasing the external K concentration. These results add further support for dopamine as a neurotransmitter

used by interplexiform cells of the goldfish retina. 44 references. (Author abstract modified)

003291 Satoh, Masamichi; Akaike, Akinori; Takagi, Hiroshi. Dept. of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Sakyo-ku, Kyoto 606, Japan **Excitation by morphine and enkephalin of single neurons of nucleus reticularis paragigantocellularis in the rat: a probable mechanism of analgesic action of opioids.** Brain Research (Amsterdam). 169(2):406-410, 1979.

The effects of morphine and enkephalin on single unit activity in the nucleus reticularis paragigantocellularis (NRPG) was investigated in male Sprague-Dawley rats. Microiontophoretic application of morphine or lev-enkephalin produced an oxcitatory action on the NRPE. In 9 of the 12 neurons excited by morphine and 4 of 5 neurons excited by leu-enkephalin, excitatory responses were also seen in response to peripheral noxious stimulation induced by intraarterial injection of bradykinin, indicating that NRPG neurons received nociceptive input from the periphery and the spinal dorsal horn. It is suggested that morphine and leu-enkephalin activated the descending component of a negative feedback loop between the NRPG and spinal dorsal horn, leading to inhibition of nociceptive transmission at the dorsal horn. 14 references.

003292 Satoh, T.; Fukumori, R.; Minegishi, A.; Kitagawa, H.; Yanaura, S. Department o f Biochemical Pharmacology, Faculty of Pharmaceutical Sciences, Chiba University, Yayoi-cho 1-33, Chiba, Japan **Induction of NADH-dependent aldehyde reductase by successive administratin of barbiturates in rat brain.** Research Communications in Chemical Pathology and Pharmacology. 23(2):297-311, 1979.

The effects of long-term administration of phenobarbital (PB) or barbital on brain aldehyde reductase (AIR) and aldehyde dehydrogenase (AIDH) activities were studied in male Wistar rats. Mitochondrial (m) AIDH and nicotinamide adenine dinucleotide (NADH) dependent AIR activities were significantly increased over control values after 5 week treatment with PB or barbital, but no signficant alternation of supernatant AIDH and nicotinamide adenine dinucleotide phosphate (NADPH) dependent AIR activities was observed. After cessation of treatment, the increased m-AIDH activity returned to control levels, but the increased activity of NADH dependent Air persisted. Intracerbroventricular injection of PB did not induce sleep in any animal pretreated with barbiturates for 5 weeks, suggesting a decrease in sensitivity to barbiturates. 13 references. (Author abstract modified)

003293 Schalock, R. L.; Brown, W. J.; Smith, R. L. Department of Psychology, Hastings College, Hastings, NE 68901 **Long-term effects of propylthiouracil-induced neonatal hypothyroidism.** Developmental Psychobiology. 12(3):187-199, 1979.

Hypothyroidism was induced in neonatal Sprague-Dawley rats by adding propylthiouracil to the lactating female's food and water. Behavioral evaluation on a six item battery occurred from 70 to 114 days of age. Results indicate long-lasting behavioral changes in the neonatal hypothyroid animals characterized by increased activity and decreased performance on avoidance and escape learning. Serum thyroxine levels were reduced in the hypothyroid animals throughout the 120 day period. Experimental animals also had fewer synaptic contacts in the cerebellar cortex when analyzed at 90 days of age. 25 references. (Author abstract)

003294 Schatz, R. A.; Frye, K.; Sellinger, O. Z. Laboratory of Neurochemistry, Mental Health Research Institute, University of Michigan Medical Center, Ann Arbor, MI 48019 **Increased in vivo methylation of (3H)histamine in the methionine sulfoximine epileptogenic mouse brain.** Journal of Pharmacology and Experimental Therapeutics. 207(3):794-800, 1978.

Fifteen minutes after intraventricular administration of triatiated histamine (3H-HA), brains of male Swiss-Webster mice pretreated with methionine sulfoximine (MSO) contained less total radioactivity than saline controls, particularly if cerebral histidine decarboxylase was partially inhibited by alpha-hydrazinohistidine (alphaHH). This decrease in brain total radioactivity was blocked by the prior i.p. administration of the monoamine oxidase inhibitor tranylcypromine. MSO significantly elevated the levels of triatiated 3-methylhistamine (3H-MeHA), and this increase was not due to an inhibition of 3H-MeHA by monoamine oxidase. The MSO-induced elevation of 3H-MeHA levels was abolished by coadministration of alpha-HH. Results indicate that MSO markedly enhanced cerebral utilization of 3H-HA, probably via an increase in the rate of its methylation to 3H-MeHA. 45 references. (Author abstract modified)

003295 Schindler, H.; Maier, P.; Schroter, E.; Cramer, H. Dept. of Neurology, University of Freiburg, Hansastr. 9, D-7800 Freiburg, Germany **Stimulation of cyclic GMP synthesis in the isolated choroid plexus of the rabbit by a muscarinic cholinergic mechanism and by sodium azide.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R30, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of biogenic amines, prostaglandins, atropine, and sodium azide on cyclic guanosine monophosphate (cGMP) levels in the rabbit choroid plexus are reported. Whereas cyclic adenosine monophosphate levels were increased by isoprenaline, histamine, and prostaglandins of the E-series, cGMP accumulation was selectively enhanced (up to three-fold) by incubation with carbamoylcholine. Preincubation with atropine blocked the effect of carbomoylcholine. Sodium azide increased cGMP levels by 900% after 15 minutes. Both carbamoylcholine and sodium-azide-induced accumulation of cGMP in the incubation medium, indicating rapid extrusion of the nucleotide from choroid plexus cells. It is suggested that cGMP may be involved in cholinergic transmission regulating blood flow or transport processes of the choroid plexus. 2 references. (Author abstract modified)

003296 Schlosser, W.; Franco, S. Research Division, Hoffmann-La Roche Inc., Nutley, NJ **Modification of GABA-mediated depolarization of the cat ganglion by pentobarbital and two benzodiazepines.** Neuropharmacology (Oxford). 18(4):377-381, 1979.

The effect of pentobarbital, flurazepam, and midazolam on gamma-aminobutyric acid (GABA) mediated depolarization in the superior cervical ganglion was assessed in cats. Intraarterial injection of 100nM pentobarbital prolonged and increased the negative potential evoked by GABA. At higher concentrations (300nM-1mcM), pentobarbital mimicked the action of GABA by depolarizing the ganglion. This effect was blocked by picrotoxin and bicuculline. Small doses of the benzodiazepines potentiated the GABA mediated depolarization, but the enhancement was preceded by antagonism with larger doses. It is concluded that pentobarbital and the benzodiazepines enhance GABA activity, at least partially, through a mechanism independent of a presynaptic site of action. 36 references. (Author abstract modified)

003297 Schmutz, M.; Olpe, H. -R.; Koella, W. P. Biological Research Laboratories, Pharmaceuticals Division, CIBA GEIGY Limited, Basel, Switzerland **Central actions of valproate sodium.** Journal of Pharmacy and Pharmacology (London). 31(6):413-414, 1979.

The effects of valproate sodium, an anticonvulsive agent, on central effects of GABA in rats were investigated. The modulation of GABA effects by application of valproate sodium on single nerve cells was examined. Valproate sodium had only a slight excitatory effect on neuron firing rates but enhanced and prolonged the inhibitory effect of GABA. The neuronal effect of valproate sodium on transsynaptic GABAergic transmission was found to be nonsignificant. It is concluded that the anticonvulsive action valproate sodium is not caused by a potentiation of central inhibitory GABAergic transmission. 5 references.

003298 Schulz, R. Max-Planck-Institut fur Psychiatrie, Abteilung Neuropharmakologie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Alterations of the endorphinergic system during chronic naloxone administration.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R66, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects in guinea-pigs of chronic, naloxone-induced endorphin receptor blockade are described. On the fifth day after implantation of a single (200mg free base) naloxone pellet, a four-fold increase in the potency of methionine-enkephalin and normorphine in inhibiting electrically evoked twitches in the ileum was observed. No changes in potency were observed for nonopiate drugs (serotonin, prostaglandin E1, and adrenaline). Opiate receptor binding studies indicated that the increased potency of opioids in the ileum was paralleled by a 30% increase in the total number of binding sites, with no change in affinity. A similar increase in the total number of opiate receptors was found in the brainstem of these animals. Methionine-enkephalin concentrations were selectively increased (30%) in the striatum. Long-term (6-8 weeks) administration of naloxone caused no further increase in enkephalin levels in the striatum and no further increase in enkephalin levels in the striatum and no further increase in the number of opiate receptors in the brain or myenteric plexus. No changes in beta-endorphin immunoreactivity were observed in the pituitary on the fifth day after pellet implantation or after long-term naloxone administration. (Author abstract modified)

003299 Schwarcz, Robert; Fuxe, Kjell. Department of Histology, Karolinska Institutet, S-104 01 Stockholm, Sweden **3H-Kainic acid binding: relevance for evaluating the neurotoxicity of kainic acid.** Life Sciences (Oxford). 24(16):1471-1479, 1979.

The characteristics and localization of tritiated kainic acid (KA) binding sites were examined in male Sprague-Dawley rat brain to determine if these sites mediate KA neurotoxicity. The binding of 3H-KA to brain membranes was saturable and displayed marked specificity for compounds related to excitatory amino acids. Its regional distribution correlated roughly with the regional neurotoxicity of in situ KA injections. Striatal KA lesions (but not interruption of striatal afferents) reduced striatal KA binding by 36%. This decrease was due to a loss in the number of binding sites; no change in affinity for the ligand was observed. It is suggested that 3H-KA binding to neuronal elements may be a valuable instrument in studies of the mechanism of neuronal degeneration caused by KA. 23 references. (Author abstract modified)

003300 Schwartz, J. P.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Nerve growth factor-mediated increase of the substance P content of chick embryo dorsal root ganglia.** Brain Research (Amsterdam). 170(1):198-202, 1979.

Examination of dorsal root ganglia (DRG) dissected from chick embryos of different ages revealed increasing concentrations of substance-P (SP) with increasing embryonic age. The SP content of DRG increased during in vitro incubation in growth medium, and this increase was blocked by cycloheximide. Incubation of DRG taken from 9-day-old chick embryos with nerve growth factor also resulted in increased SP content, and this increase was also blocked by cycloheximide. Preliminary experiments with gel filtration suggest there are at least two molecular forms of immunoreactive SP in the DRG and that nerve growth factor causes an increase in the amount of the larger molecular weight form. These findings suggest that chick embryo DRG may provide a good model for studying the biosynthesis and metabolism of SP. 15 references.

003301 Seeman, P.; Titeler, M.; Tedesco, J.; Weinreich, P.; Sinclair, D. Department of Pharmacology, University of Toronto, Toronto, Canada M5S 1A8 **Brain receptors for dopamine and neuroleptics.** Advances in Biochemical Psychopharmacology. 19:167-176, 1978.

Four in vitro radioreceptor assays for dopamine, using tritiated dopamine, haloperidol, dihydroergocryptine, and apomorphine, are described. Competition for specific binding between various pairs of agonists and antagonists indicates that high and low affinity specific binding sites for a radioagonist (tritiated dopamine or apomorphine) can be detected when competing against an antagonist (haloperidol or chlorpromazine). Conversely, high and low affinity sites for the radioantagonist (tritiated haloperidol) can be detected when competing against the agonist (dopamine or norepinephrine). Results of the radioreceptor assays point to two types of specific sites, which may represent presynaptic and postsynaptic binding sites or two different conformations of a receptor protein that can exist in either the agonist or antagonist state. 70 references.

003302 Sharma, Virendra K.; Banerjee, Shailesh P. Department of Pharmacology and Toxicology, University of Rochester School of Medicine and Dentistry, Rochester, NY 14642 **Effect of chronic ethanol treatment on specific (3H)ouabain binding to (Na K)-ATPase in different areas of cat brain.** European Journal of Pharmacology (Amsterdam). 56(4):297-304, 1979.

Chronic ethanol administration in cats increased specific (3H)ouabain binding by 63% in cerebral cortex, 47% in cerebellum, 84% in amygdala, and 100% in hippocampus, but had no effect on binding in hypothalamus, thalamus, corpus striatum, and brainstem. Scatchard analysis revealed that the increases in specific (3H)ouabain binding were primarily due to changes in the densities of ouabain binding sites. Since ouabain is a specific inhibitor of sodium and potassium ion stimulated adenosine triphosphatase (Na/K-ATPase), these findings suggest that the increased Na/K-ATPase seen after chronic ethanol ingestion may be due to increased net rate of synthesis of Na,K-ATPase molecules or exposure of nonfunctional enzymes following conformational changes of plasma membrane. 34 references. (Author abstract modified)

003303 Shavit, Yehuda; Myslobodsky, Michael. Myslobodsky: Department of Neurology, UCLA School of Medicine, Los Angeles, CA 90024 **An electrophysiological correlate of amphetamine revealed motor imbalance in albino rats.** Pharmacology Biochemistry and Behavior. 10(2):195-199, 1979.

Arousal sensitive components of the bilaterally recorded visual evoked potential (VEP) were correlated with d-amphetamine-induced rotational behavior in 11 female Wistar rats. All but one rat displayed reliable interhemispheric asymmetry of the secondary slow negative wave (SNW) of the VEP. A more synchronized EEG was observed on the side of facilitated SNW. Following d-amphetamine (1.25mg/kg i.p.)administration, the rats reliably rotated toward the side with the more facilitated SNW. It is suggested that an imbalance of nigrostriatal dopa-

mine content underlies the interhemispheric asymmetry of EEG and evoked potentials. 40 references. (Author abstract modified)

003304 Sibley, David R.; Creese, Ian. Department of Neurosciences, M008, University of California, San Diego, La Jolla, CA 92093 **Guanine nucleotides regulate anterior pituitary dopamine receptors.** European Journal of Pharmacology (Amsterdam). 55(3):341-343, 1979.

Guanine nucleotides had no effect on triatiated spiroperidol binding in homogenates of bovine anterior pituitary, but markedly influenced the ability of agonists to displace 3H-spiroperidol binding. Guanosine triphosphate (GIP) and guanosine diphosphate (0.1mM) reduced the apparent affinity of dopamine and apomorphine for 3H-spiroperidol binding sites by 6-11-fold. GTP did not influence the ability of chlorpromazine, haloperidol, or bromocriptine to displace 3H-spiroperidol binding. Results suggest that bovine anterior pituitary contains two distinct dopamine receptor populations: one associated with adenylate cyclase and regulated by GTP, and one controlling prolactin release and not linked to adenylate cyclase. 5 references.

003305 Simpkins, J. W.; Kalra, S. P. Department of Pharmaceutical Biology, College of Pharmacy, University of Florida, Gainesville, FL 32610 **Blockade of progesterone-induced increase in hypothalamic luteinizing hormone-releasing hormone levels and serum gonadotropins by intrahypothalamic implantation of 6-hydroxydopamine.** Brain Research (Amsterdam). 170(3):475-483, 1979.

Attempts were made to identify sites in the preoptic tuberal pathway where noradrenergic nerve terminal damage by 6-hydroxydopamine (6-OHDA) would effectively block the progesterone (P) induced rise in the medial basal hypothalamus (MBH) luteinizing hormone releasing hormone (LH-RH) activity in estrogen primed, ovariectomized female CD rats. Bilateral implantation of 6-OHDA in the suprachiasmatic nucleus (SCN) resulted in a marked depletion of norepinephrine (NE) in and around the region of the SCN in the preoptic/anterior hypothalamic area (POA/AH), without adversely affecting dopamine concentrations; the SCN implants also blocked P-induced afternoon increases in MBH LH-RH and serum gonadotropin levels. A similar reduction in the MBN NE concentration occurred following placement of 6-OHDA in the MBH. However, MBH and olfactory tubercle implants of 6-OHDA were ineffective in suppressing the P-induced effects. Results indicate that the functional integrity of the SCN regions is critical in the manifestation of the P-induced rise in MBH LH-RH activity. This region in the POA/AH may be the primary locus of synaptic communication between NE terminals and LH-RH neurons. 23 references. (Author abstract modified)

003306 Sinatra, Raymond S.; Ford, Donald H.; Rhines, Ralph K. Department of Anatomy and Cell Biology, SUNY, Downstate Medical Center, Brooklyn, NY **The effects of acute morphine treatment on the incorporation of (3H)L-lysine by normal and regenerating facial nucleus neurons.** Brain Research (Amsterdam). 171(2):307-317, 1979.

The incorporation of tritiated L-lysine into proteins of normal and regenerating facial nucleus neurons was examined by light microscopic radioautography in male Wistar rats treated with saline or morphine sulfate (40mg/kg i.v.). Neurons were larger and the grain count in the emulsion over these cells was greater 14 and 21 days after axotomy than in unoperated rats. The accumulation of lysine into the nucleus and nucleolus was significantly reduced 60 minutes after morphine administration in both normal and regenerating neurons, but the effect was more pronounced in the latter. In the regenerating neurons, nuclear lysine uptake was depressed 3 and 7 days after axotomy, and maximum inhibition of cytoplasmic incorporation occurred 14 days after axotomy. Morphine administration decreased nucleolar lysine incorporation at all survival intervals. 23 references. (Author abstract modified)

003307 Sinha, J. N. Institut fur Pharmakologie und Toxikologie, Universitat Wurzburg, Versbacher Landstr. 8, D-8700 Wurzburg, Germany **Effects of brain transection and drugs on the release of endogenous neurotransmitters in the hypothalamus.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R60, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of brain transection on the release of endogenous catecholamines and gamma-aminobutyric acid (GABA) in the hypothalamus of cats are reported. Transection of the brain caudal to the hypothalamus greatly reduced the rate of release of catecholamines, indicating that their resting release was mainly due to impulses from the catecholamine cell bodies in the lower brainstem. The rate of resting release of GABA was slightly reduced, suggesting that GABA originated from GABA containing interneurons within the hypothalamus. Pretreatment with reserpine decreased the levels of catecholamines and GABA in brain and reduced their release in the superfusate. Superfusion of the hypothalamus with cerebrospinal fluid (CSF) containing high potassium concentration and low sodium concentration enhanced the rate of release of noradrenaline, adrenaline, and GABA. This effect appeared to be calcium dependent, since it was abolished when the hypothalamus was superfused with calcium free CSF. 1 reference. (Author abstract modified)

003308 Skett, Paul; Mode, Agneta; Eneroth, Peter; Gustafsson, Jan-Ake. Department of Chemistry, Karolinska Hospital, S-104 01, Stockholm 60, Sweden **The effect of various centrally-acting drugs on hepatic steroid metabolism in male and female rats.** Biochemical Pharmacology (Oxford). 28(6):719-722, 1979.

The effects of various centrally acting drugs on steroid metabolism in the liver and pituitary hormone concentration in the serum of male and female rats were investigated. Picrotoxin, morphine and LSD had a general stimulatory action on hepatic steroid metabolism whereas thiosemicarbazide was without effect. Clonidine resulted in a more female type of metabolism in the male animals. All drugs tested except thiosemicarbazide had effects on pituitary hormone secretion although not always the effects that have been previously reported. Correlations between changes in haptic steroid metabolism and changes in pituitary hormone secretion were observed but were not consistent. It is concluded that, of the drugs tested, only clonidine may have an effect on feminizing factor secretion indicating that this may be controlled in part by the noradrenergic system of the brain. 42 references. (Author abstract modified)

003309 Slater, I. H.; Rathbun, R. C.; Kattau, R. Lilly Research Laboratories, Eli Lilly and Company, P. O. Box 618, Indianapolis, IN 46206 **Role of 5-hydroxytryptaminergic and adrenergic mechanism in antagonism of reserpine-induced hypothermia in mice.** Journal of Pharmacy and Pharmacology (London). 31(2):108-110, 1979.

The role of biogenic amine uptake in the antagonism of reserpine induced hypothermia was examined in male Lai-Cox mice. Fluoxetine, a specific inhibitor of 5-hydroxytryptamine (5-HT), did not prevent reserpine hypothermia when injected before reserpine and had only slight effects when injected during profound postreserpine hypothermia. Clomipramine, which is metabolized to a monomethyl compound that specifically inhibits noradrenaline uptake, did facilitate recovery after a latent period. The noradrenaline uptake inhibitors nisoxetine and desi-

pramine both effectively antagonized reserpine induced hypothermia. Results indicate that the antagonism of reserpine hypothermia by antidepressant drugs in mice depends on adrenergic rather than serotonergic mechanisms. 12 references.

003310 Slotkin, Theodore A. Department of Pharmacology, Duke University Medical Center, Durham, NC 27710 **Ornithine decarboxylase as a tool in developmental neurobiology.** Life Sciences (Oxford). 24(17):1623-1629, 1979.

The developmental pattern of ornithine decarboxyllase (ODC) activity is discussed. ODC catalyzes the formation of putrescine from ornithine, the first and probably rate limiting step in the synthesis of the polyamines. In addition to its important role in normal cellular biochemistry, development, and function, ODC is a valuable tool for studies of normal and disturbed ontogeny of the central and peripheral nervous systems. The effects of hormones, drugs, and maternal/neonatal interactions on ODC can be used to predict subsequent alteractions in brain growth, central neurotransmitter systems, and ontogeny of sympathetic nerve function. 55 references. (Author abstract modified)

003311 Spano, P. F.; Govoni, S.; Trabucchi, M. Institute of Pharmacology, University of Cagliari, I-09100 Cagliari, Italy **Studies on the pharmacological properties of dopamine receptors in various areas of the central nervous system.** Advances in Biochemical Psychopharmacology. 19:155-165, 1978.

Studies of the effects of dopaminergic drugs on the activity of dopamine stimulated adenylate cyclase in various areas of rat brain are summarized. Sulpiride showed a specific interaction with dopamine receptors in radioreceptor binding studies, but did not block dopamine stimulated adenylate cyclase in vitro or in vivo. In contrast, ergot derivatives, which are believed to have potent stimulatory effects on dopamine receptors, did not stimulate cyclic 3',5'-monophosphate accumulation in striatal homogenates but did show blocking properties on the enzyme activity stimulated by dopamine. It is suggested that there are two distinct populations of dopamine receptors, of which only one is directly coupled to the activation of adenylate cyclase. 44 references.

003312 Spear, Linda Patia. Research Foundation of State University of New York, Binghamton, NY 13901 **Chronic administration of haloperidol during development. (Unpublished paper).** Final Report, NIMH Grant RO3-MH-29834, 1978. 40 p.

The effects of chronic haloperidol treatment during development, as measured behaviorally, pharmacologically, and neurochemically, were determined in Sprague-Dawley rats. The results indicate that although chronic treatment of haloperidol during development and in adulthood both produce hyperactive behavior, the pharmacological responsiveness to a variety of agents after such treatment are opposite in the two age groups. In adults, it produces dopamine receptor hypersensitivity, while during development it is consistent with a postulated receptor hyposensitivity. A number of explanations for these findings are possible, and future research must determine if there are long-term alterations in dopamine-receptor-binding in animals given chronic haloperidol dosages during development. Implications for research in developmental psychobiology, drug addiction, and the role of neurotransmitter systems in the developmental process are discussed. The use of psychopharmacological procedures to analyze the ontogeny of learning and retention is examined in Appendix 3. 24 references.

003313 Spehlmann, R.; Norcross, K.; Grimmer, E. J. Veteran Administration Lakeside Hospital, Chicago, IL **Selective blockade by scopolamine of synaptic responses in cat's caudate nucleus and its modification by lesions of the substantia nigra.** Brain (London). 101(4):649-659, 1978.

The effects of the muscarinic blocking agent scopolamine on synaptic responses of neurons were investigated in the intact feline caudate nucleus and in the caudate nucleus depleted of dopamine by longstanding nigrostriatal lesions. In the intact caudate nucleus depleted of dopamine by longstanding nigrostriatal lesions. In the intact caudate nucleus, microiontophorectic application of scopolamine selectively blocked the neuronal responses to stimulation of the caudate nucleus near the recording site without affecting the responses to stimulation of the sensorimotor cortex or the substantia nigra in the same fashion. This suggests that acetylcholine is a synaptic transmitter of caudate interneurons. Responses to thalamic stimuli were also blocked by scopolamine, suggesting that acetylcholine may be a transmitter of thalamic afferents although the course of these afferents is unclear. In the dopamine depleted caudate nucleus, scopalamine was more effective than in the intact caudate nucleus, blocking the neuronal responses to stimulation of the caudate nucleus. This greater blocking effect by scopolamine suggests an increased effect of endogenous acetylcholine in this response and supports previous observations of an increased excitatory effect of iontophoretic acetylcholine in the dopamine depleted caudate nucleus. These results suggest that the acetylcholine supersensitivity which follows nigrostriatal degeneration may be due to increased effectiveness of synaptic transmission by cholinergic interneurons in the caudate nucleus. 32 references. (Author abstract modified)

003314 Sperk, Gunther; Schlogl, Elisabeth. Institute of Biochemical Pharmacology, University of Vienna, Faculty of Medicine, Vienna, Austria **Reduction of number of benzodiazepine binding sites in the caudate nucleus of the rat after kainic acid injections.** Brain Research (Amsterdam). 170(3):563-567, 1979.

Tritiated flunitrazepam binding in the male Sprague-Dawley rat striatum was examined in vivo and in vitro following intrastriatal injection of kainic acid. There was no significant change in binding sites for up to 10 days after the kainic acid injection, but a marked decrease in the number of binding sites for (3H)flunitrazepam was observed beginning 3 weeks after the kainic acid lesion. The affinity of the specific (3H)flunitrazepam binding was not altered. Since kainic acid produces selective degeneration of the neuronal perikarya (leaving the fibers of passage and nerve terminals intact), these findings suggest that benzodiazepine receptors are largely confined to neuronal perikarya in the rat striatum. 25 references.

003315 Speth, Robert C.; Wastesk, Gregory J.; Yamamura, Henry I. Department of Pharmacology, College of Medicine, University of Arizona Health Science Center, Tucson, AZ 85724 **Benzodiazepine receptors: temperature dependence of (3H)flunitrazepam binding.** Life Sciences (Oxford). 24(4):351-357, 1979.

The characteristics of tritiated flunitrazepam binding to benzodiazepine receptors in male Sprague-Dawley rat brain were determined at different temperatures. The rates at which (3H)flunitrazepam associated with and dissociated from benzodiazepine receptors increased with increasing temperatures. The dissociation constant (Kd) also increased with increases in temperatures and the Kd determined by Scatchard analyses of saturation isotherms showed a similar change with changes in temperature. The maximal binding capacity did not change with changes in the temperature. The inhibitory constants of several benzodiazepines to inhibit (3H)flunitrazepam binding to brain were also higher at 37 degrees centigrade than at 0 degrees, suggesting that binding affinity of all benzodiazepines to brain benzodiazepine receptors is lower at 37 degrees than at 0 degrees.

Van't Hoff analysis of (3H)flunitrazepam binding to brain at different temperatures revealed two linear components to this relationship. 20 references. (Author abstract)

003316 Speth, Robert C.; Yamamura, Henry I. Department of Pharmacology, University of Arizona College of Medicine, Tucson, AZ 85724 **Benzodiazepine receptors: alterations in mutant mouse cerebellum.** European Journal of Pharmacology (Amsterdam). 54(4):397-399, 1979.

Benzodiazepine receptors were examined in four lines of homozygous mice (staggerer, nervous, weaver, and reeler) and in their age and strain matched controls (behaviorally normal, heterozygous littermates). The density of specific tritiated flunitrazepam binding sites in the cerebella of staggerer and nervous mice was reduced by 49 and 41%, respectively, compared to their controls. The number of binding sites was increased by 44% in the reeler mouse cerebella and by 25% in the weaver mouse cerebella, compared to their controls. No significant differences in the density of (3H)-flunitrazepam binding sites were found in the cerebral cortices of any of the mutant mice, compared to their controls. Since the nervous and staggerer mutants have altered cerebellar Purkinje cells and reeler and weaver mice have normal Purkinje cells, these results suggest that benzodiazepine receptors are localized on cerebellar Purkinje cells, probably in synapses between granule cell parallel fibers and Purkinje cell dendrites. 5 references. (Author abstract modified)

003317 Spooner, P. J. R.; Olliff, C. J. Department of Pharmaceutics, School of Pharmacy, University of London, 29/39, Brunswick Square, London WC1N 1AX, England **The interaction of phenothiazine drugs with phosphatidyl choline liposomes.** Journal of Pharmacy and Pharmacology (London). 30(Supplement):38P, 1978.

In a summary of a paper presented at the British Pharmaceutical Conference in Coventry, September 1978, the equilibrium binding of chlorpromazine, thioridazine, prochlorperazine, and perphenazine to unsonicated lipsomes formed from soy bean phosphatidyl choline is described. Linear Scatchard plots indicated simple binding to identical sites for all the drugs. However, the nonlinear method of Thompson and Klotz revealed a complex type of binding for all the drugs except prochlorperazine; this complex behavior could be attributed to an interaction between binding sites, primarily of the obstructive type. Binding complexity was also reflected in the discrepancy between binding parameters determined by the two methods. 8 references. (Author abstract modified)

003318 Sprumont, P.; Lintermans, J. University Department of Anatomy, 1, rue Albert Gockel, CH-1700 Fribourg, Switzerland **Autoradiographic evidence for passage of vincamine through the blood-brain barrier.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(1):42-48, 1979.

Autoradiographies of the brain and cerebellum were performed in 8-month-old rats fllowing i.p. injection of tritiated vincamine. Labeled structures were detected only in samples processed by freeze drying or freeze substitution. Specifically labeled cells were found in the molecular layer of the cerebellar cortex and in the internal granular and deeper layers of the cerebral cortex. These cells did not belong to the vascular system. Results indicate that vincamine or its metabolites cross the blood/brain barrier. Therefore, any attempt to explain the action of vincamine on brain function should consider the cellular components of the CNS as well as the hemodynamics of the cerebral circulation. 20 references. (Author abstract modified)

003319 Stanley, Michael; Wilk, Sherwin. Neuropsychopharmacology Research Unit, Dept. of Psychiatry, NYU Medical Center, 550 First Avenue, New York, NY 10016 **Striatal DOPAC elevation predicts antipsychotic efficacy of metroclopramide.** Life Sciences (Oxford). 24(20):1907-1912, 1979.

Two benzamide derivatives, sulpiride (an atypical antipsychotic drug) and metoclopramide (a compound believed to have no antipsychotic activity), produced a dose dependent elevation of striatal 3,4-dihydroxyphenylacetic acid (DOPAC) similar to that observed with known antipsychotic drugs. The potency of metoclopramide in elevating striatal DOPAC was similar to that of chlorpromazine. These findings suggest that metoclopramide may display antipsychotic effects at a dose range similar to the therapeutic range for chlorpromazine. The inconsistent effects of metoclopramide and sulpiride in several clinical and preclinical studies are discussed. 33 references. (Author abstract modified)

003320 Stapleton, June M.; Ostrowski, Nancy L.; Merriman, Vicki J.; Lind, Marcia D.; Reid, Larry D. Rensselaer Polytechnic Institute, Troy, NY 12181 **Naloxone reduces fluid consumption in water-deprived and nondeprived rats.** Bulletin of the Psychonomic Society. 13(4):237-239, 1979.

The effects of naloxone and morphine on drinking behavior in opioid naive, water deprived Sprague-Dawley rats were investigated. Naloxone hydrochloride (.5to 10mg/kg, i.p.)reduced water consumption by rats fluid deprived for 24 hours. Administered intracerebroventricularly, 100 micrograms of naloxone produced similar effects while doses of 50 micrograms or less had no effect. Naloxone (10mg/kg) also reduced consumption of a palatable solution by nondeprived rats. Morphine sulfate failed to increase consumption. A hypothesis that might explain these findings is that the naloxone blocking of the activity of endogenous opioids modifies appetitive processes. However, the lack of a morphine effect in these experiments (i.e.,a failure to find a bipolar effect) leaves open the possibility that decreases in consumption are due to a nonspecific effect such as nausea or general malaise following naloxone administration. 11 references. (Author abstract modified)

003321 Starr, Michael S. Dept. of Pharmacology, School of Pharmacy, London University, 29/39 Brunswick Square, London WC1N 1AX, England **GABA-mediated potentiation of amine release from nigrostriatal dopamine neurones in vitro.** European Journal of Pharmacology (Amsterdam). 53(3):215-226, 1979.

The uptake and release of 3H-dopamine was studied in slices of rat corpus striatum and substantia nigra in the presence of nialamide and GABA. High potassium triggered the outflow of tritium in both brain structures and this release was potentiated by GABA in a dose related fashion, whereas the spontaneous overflow of radioactivity was unchanged. GABA also potentiated the depolarization-induced outflow of 3H-noradrenaline, 3H-5-hydroxytryptamine, and 3H-histamine without affecting their initial accumulation. The uptake of 3H-dopamine, but not that of 14C GABA, was considerably attenuated in 6-hydroxydopamine. 34 references. (Author abstract modified)

003322 Stefano, George B.; Catapane, Edward J. Department of Biological Sciences, New York City Community College, CUNY, Brooklyn, NY **Enkephalins increase dopamine levels in the CNS of a marine mollusc.** Life Sciences (Oxford). 24(17):1617-1621, 1979.

Intracardiac administration of methionine-enkephalin and leucine-enkephalin increased dopamine but not serotonin levels in the CNS of the marine mollusc Mytilus edulis. Naloxone blocked the effects of the enkephalins. These responses displayed a time dependent desensitization to methionine-enkephalin. Results suggest the presence of an opiate receptor mecha-

nism in this invertebrate species. 16 references. (Author abstract)

003323 Steinhauer, H. B.; Anhut, H.; Hertting, G. Pharmakologisches Institut, Harmann-Herder-Str. 5, D-7800 Freiburg i. Br., Germany **Induction of prostaglandin-synthesis in the mouse brain by convulsive drugs.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R69, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the induction of prostaglandin (PG) synthesis in male NMRI mouse brain by pentetrazol (50-100mg/kg i.v.)or picrotoxin (3 or 8mg/kg i.v.)is reported. Both convulsant drugs induced a dose dependent increase in PGF2alpha, PGE2, and thromboxane B2 (TXB2) in brain tissue. Indometacin abolished this drug-induced rise in PGs and TXB2. Pretreatment with 500mg/kg i.p. trimethadione or 10mg/kg i.p. diazepam 30 minutes prior to pentetrazol or picrotoxin completely prevented the seizures and the increases in PGs and TXB2. 2 references. (Author abstract modified)

003324 Stone, Eric A. Millhauser Laboratories of the Dept. of Psychiatry, New York University School of Medicine, 550 First Ave., New York, NY 10016 **Reduction by stress of norepinephrine-stimulated accumulation of cyclic AMP in rat cerebral cortex.** Journal of Neurochemistry (Oxford). 32(4):1335-1337, 1979.

The effects of desmethylimipramine HCl (DMI) and of chronic foot shock stress on c-AMP response to norepinephrine (NE) in the rat cerebral cortex were studied using a modified brain slice technique which omits the use of isobutylmethylxanthine. DMI was found to significantly reduce NE stimulated c-AMP accumulation, but not to alter basal c-AMP response to NE. There was no effect of stress on basal c-AMP levels. It is considered likely that the ability of the stress to increase the release of brain NE plays a role in this phenomenon, since previous studies have shown that central noradrenergic subsensitivity is most commonly observed after procedures thought to increase the concentration of NE at central receptors. 14 references.

003325 Study, Robert E.; Greengard, Paul. NIMH, Bethesda, MD 20014 **Regulation by histamine of cyclic nucleotide levels in sympathetic ganglia.** Journal of Pharmacology and Experimental Therapeutics. 207(3):767-778, 1978.

The role of histamine H1 and H2 receptors in the control of cyclic guanosine 3',5'-monophosphate (cGMP) and cyclic adenosine 3',5'-monophoshate (cAMP) levels in blocks of bovine superior cervical ganglia was examined. Activation of H1 receptors was associated with cGMP accumulation and activation of H2 receptors with cAMP accumulation. Histamine increased both cGMP and cAMP levels with similar time course and concentration/response relationships. Low concentrations of the H1 receptor agonist 2-2(-aminoethyl) thiazole increased cGMP but not cAMP levels, whereas low concentrations of the H2 receptor agonist 4-methylhistamine increased cAMP but not cGMP levels. H1 receptor antagonists blocked the histamine-induced increase in cGMP at low concentrations, but blocked the cAMP increase only at substantially higher concentrations; H2 receptor antagonists blocked the histamine-induced increased in cAMP but not cGMP. The effects of histamine on cyclic nucleotides did not appear to be mediated by the release of an endogenous transmitter, and the histamine-induced increase in cGMP appeared to be mediated by calcium. Comparison with previous electrophysiological and biochemical findings in sympathetic ganglia revealed a correspondence with other neurochemical systems: histamine at H1 receptors and acetycholine at muscarinic receptors both raise cGMP levels and are associated with excitatory actions, whereas histamine at H2 receptors and dopamine both raise cAMP levels and are associated with inhibitory actions. 48 references. (Author abstract modified)

003326 Sugrue, M. F. Department of Pharmacology, Organon Scientific Development Group, Organon Laboratories Limited, Newhouse, Lanarkshire ML1 5SH, England **Effect of depletion of rat brain 5-hydroxytryptamine on morphine-induced antinociception.** Journal of Pharmacy and Pharmacology (London). 31(4):253-254, 1979.

The antinociceptive effects of morphine were examined in male Wistar rats depleted of brain 5-hydroxytryptamine (5-HT) by pretreatment with fenfluramine, p-chloroamphetamine, p-chlorophenylalanine (PCPA), or 5,7-dihydroxytryptamine. None of the pretreatments directly altered hot plate reaction times. Pretreatment with fenfluramine or p-chloroamphetamine significantly attentuated the ability of morphine to increase hot plate reaction times, but pretreatment with 5,7-dihydroxytryptamine or PCPA had no effect. All four pretreatments decreased rat brain 5-HT content by 40-80%, but antagonism the antinociceptive effect of morphine could not be correlated with the degree of 5-HT depletion. Results indicate that antagonism of the antinociceptive effect of morphine is not a property common to all agents that selectively descrease rat brain 5-HT concentrations. 12 references.

003327 Sugrue, M. F. Centre de Recherche Merrell International, 16, rue d'Ankara, F-67084 Strasbourg Cedex, France **On the role of 5-hydroxytryptamine in drug-induced antinociception.** British Journal of Pharmacology (London). 65(4):677-681, 1979.

The effects of four specific inhibitors of 5-hydroxytryptamine (5-HT) uptake on antinociception induced in male Wistar rats by morphine, methadone, or pethidine were examined. Pretreatment with (plus/minus)-8-choloro-11-anti-amino-benzo- (b)-bicyclo-(3,3,1)-non-3,6a(10a)-diene hycrochloride (Org-6582), citalopram, zimelidine, or femoxetine at doses devoid of antinociceptive activity potentiated antinociception induced by morphine, but not by methadone or pethidine. A temporal correlation between the ability of Org-6582 to potentiate morphine induced antinociception and to block synaptosomal uptake of tritiated 5-HT was found. It is concluded that 5-HT plays a critical role in the antinociceptive effect of morphine but not of methadone or pethidine. 27 references. (Author abstract modified)

003328 Szerb, J. C.; Vohra, M. M. Department of Physiology and Biophysics, Dalhousie University, Halifax, Nova Scotia B3H 4H7, Canada **Potencies of normorphine and met-enkephalin in the vas deferens of different strains of mice.** Life Sciences (Oxford). 24(21):1983-1988, 1979.

The concentration of normorphine causing a 50% inhibition (IC50) of electrically induced twitches in the vas deferens from seven strains of mice varied over a 13 fold range. BALB/cKB mice were the most sensitive to normorphine and C57BL/6J mice were the least sensitive. There was no significant correlation between the IC50's of normorphine and met-enkephalin. In the sensitive BALB/cKB mice, normorphine and met-enkephalin were both more effective in inhibiting contractions evoked by 0.1Hz than by 0.01 or 1.2Hz stimulation; this difference was not observed in the insensitive C57BL/6J mice. Naloxone acted as a pure antagonist against normorphine and met-enkephalin in BALB/cKB mice, but a low concentration of naloxone potentiated the inhibitory effect of normorphine and met-enkephalin in C57BL/6J mice. Results suggest that qualitative differences in opiate receptors and differences in transmitter release mechanisms contribute to the variable sensitivity to morphine of the

vas deferens of different mouse strains. 5 references. (Author abstract modified)

003329 Tabakoff, Boris; Yanai, Joseph; Ritzmann, Ronald F. Department of Physiology and Biophysics, University of Illinois Medical Center, Chicago, IL 60680 **Noradrenaline and seizures.** Science. 203(4386):1265-1266, 1979.

Data are presented in support of a previous report that depletion of both brain noradrenaline (NA) and dopamine (DA) in varying proportions also potentiates Metrazol-induced seizures, and that catecholamines are significantly involved in seizures induced by other means. An alteration in brain NA may therefore be important in the pathogenesis of human conditions such as epilepsy. Possible reasons for differences in these results and those from other research on the role of brain NA in the development of tolerance to barbiturates are suggested. Caution is voiced against the synonymous use of the terms drug tolerance and dependence. 3 references. (Journal abstract modified)

003330 Tache, Yvette; Simard, Pierre; Collu, Robert. Peptide Biology Laboratory, Salk Institute, P.O. Box 1809, San Diego, CA 92112 **Prevention by bombesin of cold-restraint stress induced hemorrhagic lesions in rats.** Life Sciences (Oxford). 24(18):1719-1725, 1979.

The effect of intraventricularly (ivt) injected neuropeptides on cold restraint hypothermia and hemorrhagic gastric lesions were assessed in 24 hour fasted male rats. Bombesin (5-lmcg) enhanced the drop in body temperature following stress and prevented the gastric erosions in a dose dependent fashion (5.0.lmcg). Beta-endorphin exerted a similar effect, but only at the 5mcg dose level. Neurotensin, subtance P, somatostatin, and thyrotropin releasing hormone (TRH) had no effect on susceptibility to mucosal damage. Somatostatin and TRH reduced the hypothermic effect of stress. Bombesin was 250 times less potent when injected systemically than when given ivt, and its actions were not reversed by naloxone. It is suggested that the prevention of gastric erosions by bombesin may involve a central mechanism of action, independent of opiate receptors and possibly related to the hyperglycemia observed in bombesin treated rats exposed to stress. 42 references. (Author abstract modified)

003331 Takagi, Hiroshi; Shiomi, Hirohito; Ueda, Hiroshi; Amano, Hiro. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto 606, Japan **Morphine-like analgesia by a new dipeptide, L-tyrosyl-L-arginine (Kyotorphin) and its analogue.** European Journal of Pharmacology (Amsterdam). 55(1):109-111, 1979.

The analgesic effects of a new dipeptide, L-tyrosyl-L-arginine (kyotorphin), and its synthetic analogue L-Tyr-D-Arg were compared in male dd-K mice. Intracisternally injected kyotorphin (5-20mcg) produced dose related antinociceptive effects, with a median effective dose of 11.7mcg. The analgesic activity of kyotorphin was about 4.2times higher than that of methionine enkephalin. Pretreatment with naloxone completely eliminated the antinociceptive effects of kyotorphin. The analgesic activity of the L-Tyr-D-Arg analogue was about 5.6times that of kyotorphin and was also antagonized by naloxone pretreatment. Results suggest that kyotorphin undergoes rapid degradation by peptidase, and that the split of the Tyr-Arg peptide bond by the peptidase can be avoided by the substitution of D-arginine in the L-arginine position. 4 references.

003332 Tapia, Ricardo; Drucker-Colin, Rene Raul; Meza-Ruiz, Graciela; Duran, Lilia; Levi, Giulio. Departamento de Biologia Experimental, Universidad Nacional Autonoma de Mexico, Apartado Postal 70-600 Mexico 20, D. F., Mexico **Neurophysiological and neurochemical studies on the action of the anticonvulsant gamma-hydroxy, gamma-ethyl, gamma-phenyl-butyramide.** Epilepsia (Amsterdam). 20(2):135-145, 1979.

The effect of gamma-hydroxy, gamma-ethyl, gamma-phenylbutyramide (HEPB) on afterdischarges produced by hippocampal stimulation in cats was studied. HEPB notably diminished the duration of afterdischarges and in some cats blocked their propagation into the substantia nigra and the amygdala. HEPB treatment also antagonized the enhancement of afterdischarge duration produced by subconvulsive doses of bicuculline, whereas treatment with diphenylhydantoin strongly potentiated this effect of bicuculline. The intracisternal injection of HEPB or gamma-aminobutyric acid (GABA) in mice resulted in a potentiation of strychnine induced convulsions. Neurochemical experiments in mouse brain cortex slices and in synaptosomes demonstrated that HEPB did not affect the high affinity uptake of GABA, its spontaneous or Ca2 dependent release stimulated by depolarizing K concentrations, and its Na independent binding to synaptic plasma membranes. 26 references. (Author abstract)

003333 Thal, L.; Mishra, R. K.; Gardner, E. L.; Horowitz, S. G.; Varmuza, S.; Makman, M. H. Department of Neurology, Albert Einstein College of Medicine, Bronx, NY 10461 **Dopamine antagonist binding increases in two behaviorally distinct striatal denervation syndromes.** Brain Research (Amsterdam). 170(2):381-386, 1979.

To elucidate the biochemical basis of denervation supersensitivity, the binding of tritiated haloperidol and spiroperidol was studied in male Sprague-Dawley rats following striatal denervation by lesion of the substantia nigra. A change in receptor number was observed in both rotational syndromes (ipsiversive and contraversive) produced by nigral lesions. A significant increase in the maximal binding capacity for both dopamine antagonists was observed (a 36% increase for haloperidol and 60% increase for spiroperidol in the contraversive rotational syndrome, compared to a 46% increase for haloperidol and a 26% increase for spiroperidol in rats with the ipsiversive syndrome). Binding affinity for both ligands increased significantly in the ipsiversive syndrome and nonsignificantly in the contraversive syndrome. 16 references.

003334 Theriault, Elizabeth; Otsuka, Masanori; Jessell, Thomas. Jessell: Dept. of Pharmacology, Harvard Medical School, 250 Longwood Avenue, Boston, MA 02115 **Capsaicin-evoked release of substance P from primary sensory neurons.** Brain Research (Amsterdam). 170(1):209-213, 1979.

The effects of capsaicin in the isolated Wistar rat spinal cord and on the release of substance-P from spinal cord tissue were examined. Results indicate that capsaicin produces a calcium dependent release of substance-P from the spinal cord. The depolarization of spinal motoneurons by capsaicin also appears to be mediated by the release of substance-P from nerve terminals. It is suggested that the acute and chronic effects of capsaicin on nociception may be attributed to an interaction of the drug with central terminals of primary sensory neurons containing substance-P. 20 references.

003335 Toews, Arrel D.; Goodrum, Jeffry F.; Morell, Pierre. Dept. of Biochemistry and Nutrition, University of North Carolina, Chapel Hill, NC 27514 **Axonal transport of phospholipids in rat visual system.** Journal of Neurochemistry (Oxford). 32(4):1165-1173, 1979.

In a study of axonal transport of phospholipids in rat visual system, 17-day-old rats were injected intraocularly with a phospholipid precursor, (32P)phosphate, a glycoprotein precursor, (3H)fucose, and structures of the visual pathway (retina, optic nerve, optic tract, lateral genicultate body, and superior collicu-

lus) were examined between 1 hour and 21 days later. Some experiments were also conducted using (2-3H)glycerol as a phospholipid precursor. The very rapid incorporation of (2-3H)glycerol into phospholipid precursor. The very rapid incorporation of (2-3H)glycerol into phospholipids suggests a rather small and/or short lived precursor pool for this compound compared to (32P)phosphate, which showed a relatively prolonged period of incorporation. Result indicate that progressively longer times are required for either uptake, incorporation, or processing prior to transport for fucose, glycerol, and phosphate, respectively. 32 references. (Author abstract modified)

003336 Traficante, Louis J.; Siekierski, J.; Sakalis, G.; Gershon, S. Department of Psychiatry, New York University Medical Center, New York, NY 10016 **Sulfoxidation of chlorpromazine and thioridazine by bovine liver -- preferential metabolic pathways.** Biochemical Pharmacology (Oxford). 28(5):621-626, 1979.

The sulfoxidation of chlorpromazine (Thorazine), thioridazine (Mellaril), and some of their metabolites by a crude microsomal preparation from bovine liver was examined in an in vitro system which enables a rapid assessment of phenothiazine metabolism by various mammalian tissues. The enzymatic sulfoxidation of these drugs was found to require the presence of certain nicotinamide dinucleotide factors in their reduced form. Preferential sulfoxidation pathways were found to differ between these two antipsychotic agents governing whether they are converted to pharmacologically active or inactive metabolites. Chlorpromazine undergoes sulfoxidation to form its inactive ring sulfoxide; in contrast, the sulfoxidation of thioridazine occurs preferentially at its side chain sulfur residue to form mostly mesoridazine, a pharmacologically active metabolite. It is concluded that the significance of the findings lies in the future possibility of controlling the metabolism of phenothiazines to direct them along the desired metabolic pathway so that these compounds might be administered more efficaciously, thereby increasing the percent of active versus inactive metabolites, and improving patient response and possibly reducing undesirable side-effects. 20 references. (Author abstract modified)

003337 Tran, Vinh Tan; Chang, Raymond S. L.; Snyder, Solomon H. Synder: Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Histamine H1 receptors identified in mammalian brain membranes with (3H)mepyramine.** Proceedings of the National Academy of Science. 75(12):6290-6294, 1978.

The binding of tritiated mepyramine to H1-histamine receptors in male Sprague-Dawley rat, Hartley guinea-pig, and calf brain membranes was demonstrated. Potencies of H1-antihistamines at the binding sites corresponded to their pharmacological antihistamine effects in the guinea-pig ileum. Specific (3H)mepyramine binding was saturable, with a dissociation constant of 4nM and a density of 100pM/g whole brain. Some tricyclic antidepressants, including doxepin and amitriptyline, were potent inhibitors of specific (3H)mepyramine binding. Regional variations in (3H)mepyramine binding did not correlate with variations in endogenous histamine and histidine decarboxylase activity. 21 references. (Author abstract modified)

003338 Tulunay, F. C.; Yano, Ichiro; Takemori, A. E. Takemori: Dept. of Pharmacology, University of Minnesota, 105 Millard Hall, 435 Delaware St., Minneapolis, MN 55455 **Enhanced naloxone potency and the development of narcotic tolerance.** European Journal of Pharmacology (Amsterdam). 53(3):247-253, 1979.

The enhancement of naloxone potency by various biogenic amine modifying drugs and the development of narcotic tolerance were investigated. When various biogenic amine modifying drugs were administered to mice which were pretreated with morphine, none of the drugs except atropine and haloperidol altered the usual doubling of the naloxone efficacy which is observed in morphine pretreated mice. Atropine appeared to decrease the potency of naloxone. Haloperidol, which did not alter naloxone potency in normal mice, further increased the naloxone potency in morpine pretreated mice. When the biogenic amine modifiers were injected chronically to mice during the development of morphine tolerance, again none of the drugs (except haloperidol and atropine) altered the development of tolerance. Haloperidol appeared to enhance and atropine to inhibit the degree of tolerance. These results indicate that it is the alteration in the narcotic-induced enhancement of naloxone potency, and not the mere alteration of naloxone potency by various drugs, which can be used as an indicator of the alterations in the development of tolerance. 28 references. (Author abstract modified)

003339 Turck, M.; Schultz, J. Pharmazeutisches Institut der Universitat Tubingen, Morgenstelle 8, D-7400 Tubingen, Germany **Chronic imipramine treatment of rats: effects on cell-free adenylate cyclase.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R65, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of chronic imipramine treatment on cell free preparations of adenylate cyclase (AC) are described. Particulate AC from rat cerebral cortex was used with 32P-adenosine triphosphate as a substrate. Noradrenaline (NA 100mcM) elicited a small but significant (about 40%) increase in cyclic 3',5'-monophosphate (cAMP) formation. In enzyme preparations from rats that had been treated orally with 30mg/kg/day imipramine for 9 days, basal enzymatic activity was not altered, but stimulation by NA was reduced by 30%. In both instances, half maximal stimulation by NA was attained at 10mcM concentrations. Addition of 2mcM desipramine, the main metabolite of imipramine, did not influence control or NA stimulated cAMP formation. These data indicate that the reduced formation of cAMP is mainly due to a reduction of receptor sensitivity toward NA, rather than to drug-induced changes in AC activity. The activation of cell free AC by NA was inhibited to about 60% by 30mcM concentrations of the alpha-receptor antagonist phentolamine or the beta-receptor blocking agent propranolol; incubation with both compounds produced an additive effect. These findings suggest that both alpha-adrenergic and beta-adrenergic receptors are involved in the subsensitivity seen after chronic imipramine treatment in rats. (Author abstract modified)

003340 U'Prichard, David C.; Bechtel, W. Dietrich; Rouot, Bruno M.; Snyder, Solomon H. Snyder: Dept. of Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Multiple apparent alpha-noradrenergic receptor binding sites in rat brain: effect of 6-hydroxydopamine. (Unpublished paper).** Research Report, NIMH Grant MH-18501, 1978. 43 p.

Evidence for discrete high affinity and low affinity (3H)clonidine binding sites in rat central nervous system with specific properties resembling alpha-noradrenergic receptor binding sites, which are affected differentially by 6-hydroxydopamine, is presented. High affinity binding levels vary 14 fold between lowest values in corpus striatum and cerebellum and highest values in cerebral cortex. Low affinity binding varies less regionally with highest levels in the hypothalamus. It was found that 6-hydroxydopamine treatment doubles the number of high affinity (3H)clonidine sites in the cortex, but does not alter the number of low affinity sties. Also, 6-hydroxydopamine increases high affinity binding much more than low affinity binding throughout the brain, and 6-hydroxydopamine increases by

50% the number of (3H)WB-4101 and (3H)epinephrine alpha receptor sites in the cerebral cortex. 21 references. (Author abstract modified)

003341 Uhl, George R.; Goodman, Robert R.; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Neurotensin-containing cell bodies, fibers and nerve terminals in the brain stem of the rat: immunohistochemical mapping.** Brain Research (Amsterdam). 167(1):77-91, 1979.

Neurotensin immunoreactive perikarya, fibers, and nerve terminals were localized in discrete regions of the Sprague-Dawley rat brainstem. Cell body groups were found in the inner aspect of the substantia gelatinosa of the caudal trigeminal nuclear complex, the nucleus of the solitary tract, the parabrachial nuclei, the locus coeruleus, the dorsal raphe nucleus, the periaqueductal gray matter, and the ventral tegmental area of Tsai. These areas of cell body density were accompanied by concentrations of fibers and terminals, while the occasional positive perikaryon noted in the dorsal cochlear nucleus was accompanied by only sparse fluorescent fiber/terminal patterns. Other brainstem regions, such as the floor of the fourth ventricle and aspects of the caudal ventrolateral reticular formation, possessed substantial numbers of fibers and terminals that were not accompanied by cell bodies. Many aspects of this distribution coincide with the brainstem distribution of the enkephalin pentapeptides, but significant differences in localization were also evident. Neurotensin was also present in areas enriched in norepinephrine, dopamine, serotonin, and substance-P. 30 references. (Author abstract modified)

003342 van der Laan, J. W.; de Boer, Th.; Bruinvels, J. Dept. of Pharmacology, Faculty of Medicine, Erasmus University Rotterdam, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands **DI-n-propylacetate and GABA degradation. Preferential inhibition of succinic semialdehyde dehydrogenase and indirect inhibition of GABA-transaminase.** Journal of Neurochemistry (Oxford). 32(6):1769-1780, 1979.

The effect of DI-n-propylacetate (DPA) on the affinity of succinate semialdehyde (SSA) for gamma-aminobutyric acid transaminase (GABA-T) and succinate semialdehyde: nicotinamide adenine dinucleotide oxidoreductase (SSA-DH) and on the conversion of GABA into SSA was examined in male Wistar rat brain homogenates. Results indicate that GABA accumulation in the brain, after administration of DPA in vivo, is caused by SSA-DH inhibition. The higher level of SSR that results from inhibition of SSA-DH initiates the reverse reaction of GABA-T, thereby increasing the level of GABA via conversion of SSA. The degradation of GABA is inhibited by SSA, since SSA has a strong inhibitory effect on the forward reaction. 48 references. (Author abstract modified)

003343 VanderWende, C.; Spoerlein, M. T. College of Pharmacy, Rutgers University, P.O. Box 789, Piscataway, NJ 08854 **Effect of narcotics on monoamine oxidase activity of mouse brain.** Research Communications in Chemical Pathology and Pharmacology. 24(1):103-113, 1979.

The effects of morphine, levorphanol, and methadone on the monoamine oxidase (MAO) activity of male CF-1 mouse brain were examined. Methadone and levorphanol both produced dose dependent inhibition of whole brain mitochondrial MAO in vitro, whereas morphine had little effect in vitro except at very high doses. When acutely administered to mice, methadone produced a slight but significant inhibition of whole brain MAO and a 34% inhibition of the striatal enzyme. In contrast, morphine produced a marked enhancement of the activity of the striatal enzyme. Results suggest that this in vivo effect of morphine is indirect. 9 references. (Author abstract modified)

003344 Verity, M. Anthony; Brown, W. Jann; Cheung, Marshall K. Dept. of Pathology, Brain Research Institute, University of California Center for the Health Sciences, Los Angeles, CA 90024 **On the mechanism of ouabain inhibition of synaptosome protein synthesis.** Journal of Neurochemistry (Oxford). 32(4):1295-1301, 1979.

The mechanism of ouabain inhibition of synaptosome protein synthesis was investigated in adult rats. Ouabain inhibited incorporation of radiolabelled leucine or glycine into the protein of neonatal synaptosome fractions, but had minimal effect on preparations from adult rats. Leucine uptake into synaptosomes was rapid but not influenced by ouabain, in contrast to ouabain inhibition of (14C)glycine and (14C)gamma-aminobutyric acid uptake. Ouabain blocked the Na dependent (stimulated) component of synaptosome fraction protein synthesis in the presence of K. Ouabain inhibition was not alleviated by addition of ADP or ATP. Atractylate failed to influence (3H)leucine uptake or incorporation. Synergistic inhibition by ouabain was observed with the cycloheximide sensitive component of protein synthesis and the chloramphenicol sensitive phase. Increasing the medium Ca2 concentration stimulated protein synthesis and this stimulated component was inhibited by ouabain. Ouabain inhibition was associated with decreasing intraterminal K concentration and (K)i was linearly related to the protein synthesis rate in control and ouabain treated preparations. 30 references. (Author abstract modified)

003345 Waddington, John L.; Cross, Alan J. Division of Psychiatry, MRC Clinical Research Centre, Watford Road, Harrow, Middlesex, HA1 3UJ, England **Baclofen and muscimol: behavioural and neurochemical sequelae of unilateral intranigral administration and effects on 3H-GABA receptor binding.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 306(3):275-280, 1979.

Unilateral intranigral injections of the gamma-aminobutyric acid (GABA) analogue baclofen (5-1000ng) produced a maximal contralateral rotational response in male Sprague-Dawley rats that was only 40% of that produced by GABA agonist muscimol (0.25-100ng). The behavioral effects of both drugs were only weakly antagonized by haloperidol and were not antagonized by 6-hydroxydopamine lesions of ipsilateral dopamine (DA) neurons, indicating that these responses were independent of dopaminergic mechanisms. The effects of baclofen were weakly antagonized by picrotoxin. Intranigral muscimol and baclofen substantially elevated striatal DA concentrations. Muscimol substantially elevated striatal dihydroxyphenylacetic acid, but not homovanillic acid; baclofen did not significantly affect either metabolite. Baclofen, GABA, and muscimol displaced specific 3H-GABA binding in vitro with median inhibitory constants of 40mcm, 400nM, and 40nM, respectively. Results indicate that muscimol and baclofen do not act via a unitary GABA mechanism. Baclofen does not appear to be a pure GABA agonist, but may be a partial agonist at nigral GABA receptors. 41 references. (Author abstract modified)

003346 Wagner, H. Ryan; Crutcher, Keith A.; Davis, James N. Davis: Neurology Section, V.A. Medical Center, 508 Fulton Street, Durham, NC 27705 **Chronic estrogen treatment decreases beta-adrenergic responses in rat cerebral cortex.** Brain Research (Amsterdam). 171(1):147-151, 1979.

Chronic exposure of ovariectomized rats to 17 alpha-ethynyl estradiol decreased beta-adrenergic cyclic adenosine 3',5'-monophosphate responses in the cerebral cortex. This change appeared to be mediated in part by a decrease in beta-adrenergic

receptor density. Possible explanations for the effect of estrogens on beta-adrenergic responses are considered. 20 references.

003347 Walker, Jonathan E.; Goodman, Patsy; Jacobs, Donald; Lewin, Edward. Veterans Administration Hospital, Dallas, TX 75216 **Uptake and release of norepinephrine by slices of rat cerebral cortex: effect of agents that increase cyclic AMP levels.** Neurology. 28(9):900-904, 1978.

Cerebral cortical slices from rats were incubated in physiologic saline, and the uptake, release and Kstimulated release of norepinephrine were measured. Dibutyryl cyclic AMP, the phosphodiesterase inhibitors aminophylline and papaverine, and adenosine all caused a variable increase in uptake of norepinephrine at concentrations ranging from .0000001 to .0001 M. Prostaglandin E1 and E2 appeared to have no effect on uptake, but this may be because the alcohol required to dissolve them had an inhibitory effect on uptake. None of these compounds appeared to affect basal or stimulated release of norepinephrine. These agents seem therefore to have an effect opposite to that of the tricyclic antidepressants which inhibit uptake of norepinephrine. It is suggested that, since norepinephrine's postsynaptic effects are usually inhibitory in the cortex, the stimulatory effect of the drugs tested on the presynaptic uptake of norepinephrine may explain the stimulant and epileptogenic effects of these drugs. 19 references. (Author abstract)

003348 Wang, C. M.; James, C. A. Department of Pharmacology, Wellcome Research Laboratories, Research Triangle Park, NC 27709 **An analysis of the direct effect of chlordiazepoxide on mammalian cardiac tissues and crayfish and squid giant axons: possible basis of antiarrhythmic activity.** Life Sciences (Oxford). 24(15):1357-1365, 1979.

The mechanism underlying the antiarrhythmic effects of chlordiazepoxide was examined. In canine heart, chlordiazepoxide depressed the enhanced repetitive discharges in subendocardial Purkinje fibers surviving acute myocardial infarction. The drug altered the action potential characteristics of Purkinje fibers without significantly altering the resting membrane potential. The maximal rate of upstroke was significantly reduced only at 0.0001M and above in Purkinje fibers, and the membrane response curve was consistently shifted to the right. Chlordiazepoxide exerted nerve blocking potency comparable to lidocaine in the crayfish giant axon and suppressed the transient inward sodium current and, to a lesser extent, the steady state potassium current in the squid axon. These results demonstrate a direct action on cardiac and axonal membranes, which may be partially responsible for the antiarrhythmic activity of this agent. 21 references. (Author abstract modified)

003349 Warsh, Jerry J.; Coscina, Donald V.; Godse, Damodar D.; Chan, Peter W. Dept. of Neurochemistry, Clarke Institute of Psychiatry, University of Toronto, 250 College St., Toronto, Ontario M5T IR8, Canada **Dependence of Brain tryptamine formation on tryptophan availability.** Journal of Neurochemistry (Oxford). 32(4):1191-1196, 1979.

The dependence of rat brain tryptamine (TA) formation on tryptophan availability was investigted. Rat brain TA was found to accumulate linearly with respect to time over 90 minutes following pargyline. The in vivo rate of brain TA appearance was estimated to be 0.1nmol/g/h. After tryptophan loading, the accumulation of brain TA and 5-HT in pargyline pretreated rats was linearly related to both brain and plasma tryptophan concentrations. Low doses of tryptophan produced significant increments in brain TA formation. Findings indicate that the in vivo formation of TA in rat brain is directly dependent upon brain and plasma tryptophan concentrations. 23 references. (Author abstract modified)

003350 Weinstock, M.; Zavadil, A. P., III; Kopin, I. J. Laboratory of Clinical Science, NIMH Bethesda, MD 20014 **Peripheral catecholamines mediate certain responses to central cholinergic receptor stimulation by oxotremorine. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 15 p.

The role of peripheral catecholamines in mediating the pressor and tremorigenic effects of oxotremorine were investigated in conscious rats. At time of peak tremor intensity, oxotremorine increased plasma adrenaline and noradrenaline three to four fold. Tremor intensity was substantially reduced by either adrenal medullectomy, chemical sympathectomy with 6-hydroxydopamine, or injection of 2.5mg/kg L-propranolol. The pressor response to oxotremorine was not reduced by adrenal denervation, which however, prevented the usual rise of plasma adrenaline, but not that of noradrenaline. It is concluded that central cholinergic receptor stimulation activates the sympatho-adrenal system. While both adrenaline and intact sympathetic nerves are necessary for the mediation of the full tremorigenic effect, the pressor response to oxotremorine is mainly due to the effect of noradrenaline on vascular alpha-receptors. 2 references. (Author abstract)

003351 Weinstock, Marta; Zavadil, Anthony P., III; Chiueh, Chuang C.; Kopin, Irwin J. Zavadil: Pharmacology-Toxicology Program, National Institute of General Medical Sciences, Bethesda, MD 20014 **The effect of oxotremorine on blood pressure and plasma catecholamines in conscious and anesthesized rats.** Life Sciences (Oxford). 24(4):301-310, 1979.

Oxotremorine caused a pressor response in conscious male Sprague-Dawley rats, accompanied by a large increase in circulating catecholamines. This effect was reduced by urethrane and abolished by pentobarbital anesthesia. Atropine methyl nitrate antagonized the initial bradycardia and hypotension induced by oxotremorine and significantly reduced the rise in plasma norepinephrine (but not epinephrine). Oxotremorine appears to activate the sympathetic nervous system reflexively through baroceptors and directly by stimulation of muscarinic receptors in the central nervous system. 16 references. (Author abstract modified)

003352 Wenzl, H. A. Nattermann & Cie. GmbH, HA Pharmakologie, Nattermannallee 1, D-5000 Cologne 30, Germany **Special experiments on central nervous effects of amitriptylinoxide considering pharmacokinetic aspects.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1879-1883, 1978.

A few conclusive experimental models (barbiturate sleep, tetrabenazine reversion, maximum electroschock) were chosen to collect comprehensive data with mice and rats on the pharmacodynamic characteristics of amitriptylinoxide increased with repeated application of the substance. Its maximum level was reached after 5-10 days, and a simultaneous decrease of the sedative component was observed during the same interval. Comparative investigations of oral and i.v. application leads to the conclusion that amitriptylinoxide is absorbed rapidly and almost completely from the intestine when administered orally. As had beeen expected, diazepam intensified the sedative effect of amitriptylinoxide. These findings suggest an additive action of the two substances. 6 references. (Author abstract modified)

003353 Wesche, D. L.; Fredrickson, R. C. A. Indiana University School of Medicine, Department of Pharmacology, Indianapolis, IN **Diurnal differences in opioid peptide levels correlated with nociceptive sensitivity.** Life Sciences (Oxford). 24(20):1861-1867, 1979.

Whole brain total opioid levels in mice sacrificed in late afternoon (when they are least responsive to pain) were higher than those in mice sacrificed in the early morning (when they are

most responsive to pain). No comparable increases in levels of met5-enkephalin or leu5-enkephalin were observed. However, levels of met5-enkephalin in mice tested after hotplate stress were significantly increased (compared to unstressed animals) in the afternoon, but not in the morning. Results suggest a correlation between activity in endogenous opioid systems and the ability of mice to withstand noxious stimuli. 20 references. (Author abstract modified)

003354 Westerink, B. H. C. Laboratory for Pharmaceutical and Analytical Chemistry, Department of Clinical Chemistry, Groningen University, Groningen, The Netherlands **Effect of centrally acting drugs on regional dopamine metabolism.** Advances in Biochemical Psychopharmacology. 19:255-266, 1978.

Studies of the effects of centrally acting drugs on dopamine (DA) metabolism in the nerve terminal rich areas of the forebrain, the cell bodies and dendrites of the substantia nigra, and the retina are reviewed. The regulation of DA metabolism in the substantia nigra resembled that in the terminal areas in some ways, but not in others; no consistent evidence for dopaminergic transmission in the substantia nigra was obtained. In the retina, dopaminergic transmission appeared to be regulated by dopamine autoreceptors (presynaptic DA receptors on cell bodies, dendrites, or nerve terminals of dopaminergic neurons). 35 references.

003355 Westerink, Ben H. C. Pharmaceutical Laboratories, Groningen University, Antonius Deusinglaan 2, 9713 AW Groningen, The Netherlands **Further studies on the sequence of dopamine metabolism in the rat brain.** European Journal of Pharmacology (Amsterdam). 56(4):313-322, 1979.

The time/response curve of 3,4-dihydroxyphenylacetic acid (DOPAC) and homovanillic acid (HVA) in the male Wistar rat striatum was determined during treatment with apomorphine, haloperidol, morphine, oxotremorine, or reserpine. Results indicate that changes in DOPAC concentrations consistently preceded changes in HVA concentrations, suggesting HVA is a second metabolite rather than a marker of extraneuronal metabolism. The turnover of HVA following tropolone treatment indicated that tropolone inhibited catechol-O-methyltransferase. The turnover of 3-methoxytyramine (3-MT) after tropolone (during monoamine oxidase inhibition) was 1.9nmol/g/hour, suggesting that 3-MT is not an alternative metabolite for dopamine degradation during monamine oxidase inhibition. During reserpine or pargyline treatment, dopamine appeared to leave the brain unmetabolized or via unknown metabolic pathways. 19 references. (Author abstract modified)

003356 Westerink, Ben H. C. Laboratory for Pharmaceutical and Analytical Chemistry, Groningen University, Antonius Deusinglaan 2,9713 AW Groningen, The Netherlands **Effects of drugs on the formation of 3-methoxytyramine, a dopamine metabolite, in the substantia nigra, striatum, nucleus accumbens and tuberculum olfactorium of the rat.** Journal of Pharmacy and Pharmacology (London). 31(2):94-99, 1979.

The effects of centrally acting drugs on regional concentrations of the dopamine metabolite 3-methoxytyramine (3-MT) in male Wistar rat brain during monoamine oxidase inhibition with pargyline were studied. After haloperidol, morphine, or sulpiride, the pargyline induced 3-MT concentrations in the striatum, nucleus accumbens, tuberculum olfactorium, and substantia nigra were comparable to reported changes in homovanillic acid concentrations. Dose/response curves for 3-MT increases in various brain regions after ()-amphetamine indicated that the effect of ()-amphetamine on 3-MT formation was much more pronounced in nerve terminal areas, particularly in mesolimbic structures. Treatment with apomorphine, gamma-hydroxybutyric acid, haloperidol, and reserpine revealed pronounced differences in reginal 3-MT concentrations, indicating important differences between the regulation of dopamine metabolism in the substantia nigra and nerve terminal areas. 20 references. (Author abstract modified)

003357 Wiegant, V. M.; Dunn, A. J.; Schotman, P.; Gispen, W. H. Dunn: Department of Neuroscience, University of Florida College of Medicine, Gainesville, FL 32610 **ACTH-like neurotropic peptides: possible regulators of rat brain cyclic AMP.** Brain Research (Amsterdam). 168(3):565-584, 1979.

The influence of behaviorally active, N-terminal fragments of adrenocorticotropic hormone (ACTH) on the accumulation of cyclic adenosine monophosphate (cAMP) in Wistar rat brain was investigated in broken cell preparations of subcortical tissue, in slices of neostriatum, and in vivo. ACTH1-24 had a biphasic effect on the activity of adenylate cyclase in broken cell preparations of rat brain subcortical tissue: concentrations below 25mcM stimulated adenylate cyclase activity, while concentrations of 0.1mM and higher inhibited it. Structure/activity studies revealed that ACTH1-16-NH2 and ACTH4-7 also inhibited adenylate cyclase activity, whereas ACTH11-24, ACTH1-10, ACTH4-10, (D-Phe7)ACTH1-10, and (D-Phe7)ACTH4-10 were inactive in this respect. ACTH1-24 enhanced the accumulation of cAMP in slices from neostriatum in a dose dependent manner; this effect was maximal 7.5minutes after the addition of the peptide and was potentiated by the phosphodiesterase inhibitor, isobutylmethylxanthine. Intraventricular injection of 1mcg ACTH1-16-NH2 significantly elevated (27%) the concentration of cAMP in the septal region. The possible involvement of cAMP as a second messenger for N-terminal fragments of ACTH in the CNS is discussed. 49 references. (Author abstract modified)

003358 Wiesel, Frits-Axel; Bjerkenstedt, Lars; Skett, Paul. Department of Pharmacology, Karolinska Institutet, S-10401 Stockholm, Sweden **Effect of melperone, two of its metabolites and thiothixene on central monoamine metabolism and prolactin levels in rodents.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(2):129-136, 1978.

The effects of melperone and thiothixene on the concentrations of monoamine metabolites in brain and prolactin in serum were examined in male NMRI mice and Sprague-Dawley rats. Both drugs increased brain concentrations of dihydroxyphenylacetic acid and homovanillic acid (HVA) in a dose dependent manner, but had no effect on 5-hydroxyindoleacetic acid. The effect of thiothixene was longer lasting and about five times greater than that of melperone. Melperone, but not thiothixene, increased levels of 3-methoxy-4-hydroxyphenylethylene glycol (MOPEG). Several hours after administration of melperone, levels of HVA and MOPEG were diminished. Both drugs increased prolactin concentrations in rat serum; thiothixene was about 10 times more potent than melperone. Of two urinary metabolites of melperone examined, one was ineffective and the other caused the same qualitative effects on monoamine metabolism as melperone itself, but with reduced potency. 22 references. (Author abstract modified)

003359 Williams, Redford B., Jr.; Eichelman, Burr S.; Ng, L. K. Y. Box 3416, Dept. of Psychiatry, Duke University Medical Center, Durham, NC 27710 **The effects of peripheral chemosympathectomy and adrenalectomy upon blood pressure responses of the rat to footshock under varying conditions: evidence for behavioral effects on patterning of sympathetic nervous system responses.** Psychophysiology. 16(2):89-93, 1979.

To test the hypothesis that different patterns of sympathetic response account for the behavioral effects upon the rat's blood

pressure response to footshock, different aspects of sympathetic function were selectively impaired and the effects of such impairment upon the blood pressure response were observed under varying behavioral conditions. In rats treated with intravenous 6-hydroxydopamine, a drug that selectively destroys peripheral nerve endings when given by this route, blood pressure response shows a significant increase. In contrast, adrenalectomy converts a slight increase in blood pressure after intact rats were shocked alone in the cage, into a significant decrease. These alterations in blood pressure suggest that the sympathetic response to stressful stimulus in not an all or none response, but rather, consists of a patterned activation depending upon the behavioral response available. Current physiological findings are consistent with neuroendocrine research in which coping behavior is found associated with a predominant norepinephrine release by the sympathetic nervous system, and stress without available coping responses is associated with release also of epinephrine. 24 references. (Author abstract modified)

003360 Wood, Paul L.; Cheney, D. L.; Costa, E. Cheney: Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Modulation of the turnover rate of hippocampal acetylcholine by neuropeptides: possible site of action of alpha-melanocyte-stimulating hormone, adrenocorticotrophic hormone and somatostatin.** Journal of Pharmacology and Experimental Therapeutics 209(1):97-103, 1979.

Intraventricular injection of alpha-melanocyte-stimulating hormone (aMSH), adrenocorticotropic hormone (ACTH1-24), or somatostatin increased the rate of acetylcholine turnover (TR/ACh) in the hippocampus of male Sprague-Dawley rats. These peptides could still activate TR/ACh when injected 2 to 3 weeks after surgical transection of the projections from the cingulum or the entorhinal cortex to the hippocampus or 2 to 3 hours after section of the fimbria. In contrast, the intraseptal administration of aMSH, ACTH1-24, and somatostatin did not alter hippocampal TR/ACh. Results suggest that the increase in TR/ACh elicited by the three polypeptides may be caused by their interaction with receptors in the hippocampus. The data exclude the possibility that these peptide receptors could be located in the septum or in other telencephalic areas that contain neurons projecting to the hippocampus. 35 references. (Author abstract modified)

003361 Woodruff, G. N. Pharmacology Group, School of Biochemical and Physiological Sciences, University of Southampton, Southampton S09 3TU, England **Biochemical and pharmacological studies on dopamine receptors.** Advances in Biochemical Psychopharmacology. 19:89-118, 1978.

Biochemical and pharmacological studies of dopamine receptors in the snail (Helix aspersa) brain and in the central and peripheral nervous systems of mammals are reviewed. Studies in the rat nucleus accumbens and neostriatum indicate that the dopamine receptor is quite specific, differing from alpha-adrenoceptors and beta-adrenoceptors in having an absolute requirement for hydroxyl groups in the 3 and 4 positions of the benzene ring for activity of phenylethylamine derivatives. The relative potencies of various agonists tested in the striatum and nucleus accumbens suggest that dopamine receptors are similar in these two regions of the brain and provide no evidence for the presence of two types of dopamine receptors associated with adenylate cyclase. Biochemical and behavioral studies using 2-amino-6,7-dihydroxy-1,2,3,4-tetrahydronaphthalene, a rigid analogue of dopamine corresponding to the extended beta rotamer, suggest the active conformation of dopamine at most mamalian and invertebrate dopamine receptors is close to the beta-rotamer. 110 references.

003362 Woolston, M. E.; Morgan, I. G.; Hambley, J. W. Department of Behavioural Biology, Research School of Biological Sciences, Australian National University, Canberra, A.C.T., Australia **Biochemical effects of cycloheximide in developing chick brain.** Pharmacology Biochemistry and Behavior. 10(2):245-249, 1979.

Protein synthesis in the forebrain roof was maximally inhibited (68-85%) 1 hour after intracerebral or peripheral injection of 40mcg of cycloheximide (CXM) in 12 hour, 2 day, and 16-day-old chicks. In 2-day-old chicks, the level of free lysine was elevated about 250% 1 hour after intracerebral injection of CXM. Total radioactivity in the forebrain roof following peripheral injection of labeled lysine increased by 80% in the CXM treated chicks. Following unilateral injection of 20mcg CXM into a forebrain hemisphere, the inhibition of protein synthesis spread to the opposite forebrain hemisphere and to both optic lobes within 5 minutes. These biochemical effects are discussed in relation to the use of CXM in behavioral experiments. 18 references. (Author abstract modified)

003363 Wuster, M.; Faase, E. Max-Planck-Institut fur Psychiatrie, Abteilung Neuropharmakologie, Kraepelinstrasse 2,D-8000 Munich 40, Germany **Modulation of opiate receptor sites by divalent cations.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R66, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the modulation of opiate receptor sites in the rat vas deferens (RVD) and guinea-pig ileum (strip) preparations by divalent cations is reported. In the RVD, which is normally run in magnesium ion (Mg) free, 13mM potassium ion (K) Krebs-Ringer solution, a marked preference for beta-endorphin and a relative resistance to opiate-like inhibition by normorphine and met-enkephalin was observed. When ionic conditions were changed and standard strip Krebs-Ringer solution was used, beta-endorphin potency increased two-fold and normorphine and met-enkephalin showed clear opiate-like activity. Analogous manipulations of ionic conditions in the strip preparation resulted in a three-fold reduction in the potency of opioids when Mg was omitted from the standard buffer; this effect was potentiated to 50-fold when K concentration was increased simultaneously. Radioreceptor assays in strip homgenate, employing Mg free/13mM K Krebs-Ringer solution, revealed a two-fold decrease in receptor affinity for narcotic agonists, with no change in the total number of binding sites. Similar assays in the RVD homogenate provided further evidence for specific beta-endorphin binding sites. (Author abstract modified)

003364 Yaksh, T. L.; Tyce, G. M. Department of Neurosurgery and Pharmacology, Mayo Clinic, Rochester, MN 55901 **Microinjection of morphine into the periaqueductal gray evokes the release of serotonin from spinal cord.** Brain Research (Amsterdam). 171(1):176-181, 1979.

Microinjection of 5mcg morphine sulfate into the periaqueductal gray (PAG) produced a significant increase in the levels of 5-hydroxytryptamine (5-HT) in the spinal perfusates of rats. The time course and levels of morphine analgesia were significantly correlated with levels of 5-HT release, and 5-HT release appeared to be associated with sites in the PAG that produce analgesia. These results suggest that at least a portion of the descending effects of PAG morphine are associated with the increased efflux of 5-HT terminals. Taken together with previous studies, these findings provide evidence for the activation of a mesencephalic opiate sensitive mechanism of a spinal modulatory system for which 5-HT is the neurotransmitter. 23 references.

003365 Yamaguchi, Isamu; Kopin, Irwin J. Laboratory of Clinical Science, NIMH, Building 10, Rm. 2D-46, Bethesda, MD 20014 **Plasma catecholamine and B.P. responses to sympathetic stimulation in pithed rats. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 21 p.

The relationship between stimulation of the complete sympathetic outflow from the spinal cord of pithed rats and the increases in plasma catecholamines (CA) and blood pressure (BP) were examined. It was found that sympathetic stimulation in pithed rats elicits increases in BP and plasma levels of CA. The BP is proportional to the logarithm of the plasma norepinephrine (NE) concentration. Adrenal medullectomy diminishes slightly only the initial phase of the BP responses, whereas bretylium blocks completely the BP response and diminishes by about 70% the increase in plasma NE. Adrenal medullectomy completely prevents the increase in plasma epinephrine (EPI) and diminishes by 30% plasma NE. Plasma levels of NE appear to reflect sympathetic neuronal activity, but the NE at sympathetic nerve endings is responsible for the increase in BP. EPI released from the adrenal medulla may enhance and accelerate the initial BP response, but plays only a minor role after the first 15 seconds. 15 references. (Author abstract)

003366 Yanai, Joseph; Tabakoff, Boris. Department of Anatomy and Embryology, Hebrew University-Hadassah Medical School, Jerusalem, Israel **Functional tolerance and neural and metabolic changes in HS/Ibg mice following prenatal exposure to barbiturate.** Behavior Genetics. 8(6):576-577, 1978.

A summary of a paper read at the Eighth Annual Meeting of the Behavior Genetics Association, held at the University of California at Davis, June 1978, is presented. The effects of barbiturate exposure on functional tolerance and neural and metabolic changes in HS/Ibg mice were investigated. Blood phenobarbital levels of females and fetuses ranged between 40 and 200 mcg/ml blood. On age 50 days, male offspring were injected with sodium pentobarbital. Sleep time and temperature loss were monitored, and in randomly selected individuals, brain levels were determined on awakening. All offspring developed functional tolerance during the 3 testing days as evidenced by the daily decrease in sleep time. Offspring which received phenobarbital prenatally had generally shorter sleep time, less temperature loss, and higher brain levels on awakening than controls. Since tolerance has been implicated as a possible component of addiction, offspring whose mothers consumed barbituates during pregnancy may be more prone to addiction than offspring of normal mothers. (Journal abstract modified)

003367 Yokota, Toshikatsu; Nishikawa, Nozomu; Nishikawa, Yasuo. Department of Physiology, Medical College of Shiga, Seta, Otsu, 520-21, Japan **Effects of strychnine upon different classes of trigeminal subnucleus caudalis neurons.** Brain Research (Amsterdam). 168(2):430-434, 1979

The effects of strychnine on different classes of trigeminal subnucleus caudalis neurons in Japanese monkeys were examined. In trigeminal neurons in the lateral part of subnucleus reticularis dorsalis intravenous administration of 0.03mg/kg strychnine resulted in marked expansion of the receptive field, with no change in the size of the tactile center. The number of spikes in response to cutaneous electrical stimulation of the receptive field center also increased after strychnine. In high threshold mechanoreceptors in the marginal layer of subnucleus caudalis, strychnine did not alter the size of the receptive field or the number of spikes elicited by cutaneous electrical stimulation of the receptive field. In tactile units in the pars magnocellularis of subnucleus caudalis, strychnine did not alter the size of the receptive field, but did increase the number of spikes in response to cutaneous electrical stimulation of the receptive field. Results suggest that postsynaptic inhibition plays a significant role in the modulation of information processing of nociceptive afferent inputs.

003368 Yokota, Toshikatsu; Nishikawa, Yasuo. Department of Physiology, Medical College of Shiga, Seta, Otsu, 520-21, Japan **Action of picrotoxin upon trigeminal subnucleus caudalis neurons in the monkey.** Brain Research (Amsterdam). 171(2):369-373, 1979.

The effect of the gamma-aminobutyric acid antagonist, picrotoxin, on neurons in the trigeminal subnucleus caudalis and nearby bulbar lateral reticular formation was studied in Japanese monkeys. Picrotoxin (1mg/kg i.v.)expanded the receptive field of tactile neurons in pars magnocellularis of the trigenminal subnucleus caudalis and the center of the receptive field of wide dynamic range neurons in the lateral part of subnucleus reticularis dorsalis medullae oblongatae, suggesting that picrotoxin facilitates the passage of tactile volleys to trigeminal neurons in the caudal medulla oblongata by removing presynaptic inhibition. Shrinkage of the nociceptive part of the receptive field of wide dynamic range neurons was also observed after picrotoxin, possibly as a result of enhanced postsynaptic inhibitory action of tactile volleys upon wide dynamic range neurons. 8 references.

003369 Young, W. Scott, III; Uhl, George R.; Kuhar, Michael J. Dept. of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Iontophoresis of neurotensin in the area of the locus coeruleus.** Brain Research (Amsterdam). 150(2):431-435, 1978.

The inhibition of spontaneous and glutamate stimulated firing rates of cells in the locus coeruleus of Sprague-Dawley rats following microiontophoretic application of neurotensin is reported. Such a prompt, reversible action of neurotensin, correlating with histochemical immunoreactivity, is consistent with the existence of functional neurotensin receptors and with a possible role for neurotensin as a neurotransmitter in the CNS. Thirteen of 35 cells tested were inhibited; eight of these cells were spontaneously active. Twelve of the 13 responsive cells were located in or near the locus coeruleus; the remaining responsive cell was located just lateral to the abducens nucleus. 31 references.

003370 Zatz, Martin. Section on Pharmacology, Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Low concentrations of lithium inhibit the synthesis of cyclic AMP and cyclic GMP in the rat pineal gland.** Journal of Neurochemistry (Oxford). 32(4):1315-1321, 1979.

The effects of low concentrations of lithium on the synthesis of c-AMP and c-GMP in the rat pineal gland were investigated. Lithium chloride (2mMO) significantly inhibited the increases in c-AMP and in c-GMP caused by norepinephrine or high concentrations of potassium in intact rat pineal glands. Adenylyl cyclase activity in homogenates and its stimulation by isoproterenol, a beta-adrenergic agonist, were also inhibited. Lithium reduced the apparent Vmax of isoproterenol stimulated adenylyl cyclase activity without significantly affecting the apparent affinity for isoproterenol. It is hypothesized that lithium may inhibit cyclic nucleotide synthesis by interfering with the role of divalent cations. 25 references. (Author abstract modified)

003371 Zetler, G. Abteilung fur Pharmakologie, Medizinische Hochschule Lubeck, Ratzeburger Allee 160, D-2400 Lubeck, Germany **Enkephalins as antagonists of cholecystokinin-like peptides.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R51, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of enkephalins on the stimulation of the longi-

tudinal muscle of the guinea pig ileum induced by cholecystokinin octapeptide (CCK-8), subfraction Fc of crude substance P preparations from brain, caerulein (C), pentagastrin (P), and angiotensin amide (AA) are reported. Morphine (MO), methionine-enkephalin (Met-E), and leucine-enkephalin (Leu-E) shifted the concentration/response curve of CCK-8, Fc, C, and P to the right in a parallel fashion. Naloxone abolished the effects of MO and Met-E against CCK-8 and Fc. Met-E was less active than morphine against CCK-8. AA was only weakly antagonized by MO and was resistant to Met-E. Tetrodotoxin had differential effects on the peptides. Results demonstrate some specificity in the interaction between the enkephalins and CCK-8, which may have a role in the regulatios of intestinal and brain mechanisms for controlling satiety. (Author abstract modified)

003372 Zieglgansberger, W.; Tulloch, I. F. Max-Planck-Institut fur Psychiatrie, Department of Neuropharmacology, Kraepelinstrasse 2, D-8000 Munich 40, Germany **The effects of methionine- and leucine-enkephalin on spinal neurones of the cat.** Brain Research (Amsterdam). 167(1):53-64, 1979.

Microiontophoretically applied methionine-enkephalin and leucine-enkephalin reversibly inhibited the spontaneous, synaptically-induced, and L-glutamate-induced activity of the majority of dorsal horn neurons studied in laminae 4, 5, and 6 of Rexed in pentobarbitone anesthetized cats. Most of these depressant effects were antagonized by prior application of naloxone. The enkephalins caused no change in resting membrane potential, membrane resistance, spike initiation, or spike overshoot. The membrane depolarization and associated decrease in membrane resistance following application of L-glutamate were effectively blocked by prior application of enkephalin; this effect was also antagonized by naloxone. Results suggest that enkephalinergic cells in lamina II and III may modulate cells subserving somatosensory perception, including pain. 56 references. (Author abstract modified)

003373 Zingg, Hans H.; Baertschi, Alex J.; Dreifuss, J. J. Dreifuss: Department of Physiology, University of Geneva Medical School, CH-1211 Geneva 4, Switzerland **Action of gamma-aminobutyric acid on hypothalamo-neurohypophysial axons.** Brain Research (Amsterdam). 171(3):453-459, 1979.

The effects of exogenous gamma-aminobutyric acid (GABA) and related compounds on the neurosecretory axons of isolated Sprague-Dawley rat posterior pituitaries were examined. GABA and muscimol reversibly reduced the amplitude and increased the latency of the antidromic compound action potential recorded from hypothalamo-neurohypophysial axons in response to electrical stimulation of the posterior pituitary lobe. Both actions were antagonized by bicuculline but not by strychnine. Results suggest that the peptidergic axons of the hypothalamo-neurohypophyieal tract have receptors for GABA, which is believed to be synthesized and released by neurohypophysial glial cells. 17 references.

04 MECHANISM OF ACTION: BEHAVIORAL

003374 Abou, Y. Z.; Farjo, I. B. Department of Pharmacology, Al-Mustansiriyah Medical School, Baghdad, Iraq **Reversal of DOPA-induced arousal in reserpine-treated rabbits and mice by histidine.** British Journal of Pharmacology (London). 65(2):303-309, 1979.

Histidine had no apparent effect on the behavior of albino rabbits or Swiss mice in doses up to 800 and 1000mg/kg, respectively. Histidine also failed to alter the behavioral excitation induced by L-DOPA in these animals. However, administration of histidine with or after L-DOPA in reserpine treated rabbits or mice produced a dose dependent sedation; these sedative effects were prevented by pretreatment with the histamine H1 receptor blockers, chlorpheniramine or diphenhydramine. Histidine infusion also reversed the arousal induced by imipramine in reserpine treated rabbits. The infusion of 5-hydroxytryptophan with L-DOPA, of arginine with or after L-DOPA, or of histamine after L-DOPA did not alter the DOPA-induced arousal in reserpine treated rabbits. Results indicate that histamine, formed centrally from exogenous histidine and released in increased amounts in reserpine treated animals, possesses a central sedative effect. 28 references. (Author abstract modified)

003375 Alexinsky, Tatiana; Chapouthier, Georges. Departement de Psychophysiologie, LPN-CNRS, F-91190 Gif-sur-Yvette, France **Halothane anaesthesia and DMS performance in rats: memory impairment or avoidance behaviour?** Physiology & Behavior. 22(1):99-105, 1979.

When administered after the presentation of a transient memory stimulus, halothane anesthesia led to an impairment of performance in a delayed matching to sample task in male Sprague-Dawley rats. The animals tended to systematically avoid the stimulus associated with the halothane treatment, but they were able to remember the stimulus presented just prior to the treatment. These results indicate that halothane has an aversive rather than amnesic effect in rats. 20 references. (Author abstract modified)

003376 Allikmets, Lembit H.; Stanley, Michael; Gershon, Samuel. Stanley: Neuropsychopharmacology Research Unit, New York University Medical Center, 550 First Ave., New York, NY 10016 **The effect of lithium on chronic haloperidol enhanced apomorphine aggression in rats.** Life Sciences (Oxford). 25(2):165-170, 1979.

The effect of chronic treatment with haloperidol or haloperidol plus lithium on apomorphine-induced aggression and stereotyped behavior was assessed in male Sprague-Dawley rats. Rats withdrawn from chronic haloperidol treatment showed increased aggressiveness and increased duration of stereotyped behavior following apomorphine, compared to controls. The rats treated chronically with haloperidol in combination with lithium did not display a supersensitive response. The mechanism underlying the antagonistic action of lithium on neuroleptic-induced supersensitivity is discussed. 22 references. (Author abstract modified)

003377 Babbini, M.; Gaiardi, M.; Bartoletti, M. Instituto di Farmacologia, Vai Irnerio 48, I-40126 Bologna, Italy **Influence of the 2'-chloro substitution on central activity of desmethyldiazepam.** Pharmacology (Basel). 17(3):121-127, 1978.

The behavioral and EEG effects of two diazepam derivatives N-desmethyldiazepam and 2'-chlor-N-desmethyldiazepam, were compared in male Sprague-Dawley rats. Both drugs depressed locomotor activity, facilitated behavior suppressed by punishment, increased the number of shocks received in a Sidman avoidance procedure, and caused a synchronization of the EEG lasting more than 7 hours at the highest dose. The 2'-chlor-substituted compound as much more active than desmethyldiazepam, with the drugs' potency ratio varying from 3.67 to 20.78 in the various tests. 22 references. (Author abstract modified)

003378 Baez, Luis A.; Burt, Dorothy K.; Granneman, James; Shanklin, Craig. Department of Psychology, Southern Illinois University, Carbondale, IL 62901 **Dopaminergic antagonism and catalepsy in the developing rat.** European Journal of Pharmacology (Amsterdam). 54(1/2):15-20, 1979.

The cataleptic effect of the dopaminergic blockers spiroperidol and haloperidol was investigated in developing Long-Evans rats. Results indicate that 15-day-old animals are less responsive to the cataleptic effects of the neuroleptics than are 10-day-old

and 20-day-old rats. It is suggested that the decrement in catalepsy occurring between 10 and 15 days of age is related to increased dopaminergic activity in the neostriatum. The reversal of this phenomenon by 20 days of age may be a consequence of maturation of cholinergic local circuit neurons. 30 references. (Author abstract modified)

003379 Baldauf, J.; Strauss, D. Dept. of Pharmacology and Toxicology, University of the Saarland, D-665 Homburg/Saar, Germany **Stereoselectively different actions of the enantiomers of doxylamine in guinea pigs.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R65, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the antihistaminic and sedative/hypnotic properties of the enantiomers of doxylamine in guinea-pigs are described. The dose/response curves of histamine on smooth muscle were shifted to the right by the isomers in a stereoselective fashion: the antihistaminic potency of the ()-isomer was 3-5 times higher than that of the (-)-isomer. No stereoselective antihistaminic action was observed in pacemaker activity and myocardial contractility. Stereoselective effects were deteteced in the sedative/hypnotic action of doxylamine: the sleeping time after hexobarbital (20mg/kg ip) was increased by pretreatment with 5-40mg/kg i.p.()-doxylamine in a dose dependent fashion, while the (-)-isomer caused a dose dependent decrease in hexabarbital sleeping time. The racemate of doxylamine also shortened hexobarbital sleeping time, but was less potent than the (-)-isomer. At a high dose (100mg/kg i.p.), (-)-doxylamine evoked convulsions, while the ()-isomer had no apparent behavioral effect. (Author abstract modified)

003380 Balsara, J. J.; Jadhav, J. H.; Muley, M. P.; Chandorkar, A. G. no address **Effects of drugs influencing central 5-hydroxytryptaminergic mechanisms on morphine-induced catalepsy in the rat.** Journal of Pharmacy and Pharmacology (London). 31(4):255-257, 1979.

Drugs that influence central 5-hydroxytryptamine (5-HT) systems altered the cataleptogenic effect of morphine in rats. Pretreatment with clomipramine (a selective 5-HT neuronal uptake blocker), quipazine (a 5-HT agonist), or L-tryptophan (a 5-HT precursor) potentiated the cataleptic effect of morphine. Pretreatment with methysergide (A 5-HT receptor antagonist) decreased the cataleptic effect of morphine. These results suggest that activation of the central 5-HT system has a facilitatory effect on the catalepsy induced by morphine, while inhibition of the 5-HT system decreases the morphine effect. It is suggested that activation of central 5-HT mechanisms of morphine may result in inhibition of the central dopaminergic system, decreasing the amount of dopamine at postsynaptic striatal dopamine receptor sites and producing catalepsy. 14 references.

003381 Bardo, Michael T.; Hughes, Richard A. Department of Psychology, Iowa State University, Ames, IA 50011 **Exposure to a nonfunctional hot plate as a factor in the assessment of morphine-induced analgesia and analgesic tolerance in rats.** Pharmacology Biochemistry and Behavior. 10(4):481-485, 1979.

Male hooded rats given morphine and not exposed to a hotplate apparatus prior to testing displayed two dissociable sources of analgesia. Compared to rats treated with morphine or saline and exposed to a nonfunctional hotplate on pretest days, rats given morphine or saline and not exposed to the hotplate on pretest days showed increased paw lick latency when tested on a functional hotplate with or without morphine. This behavioral analgesic effect was not antagonized by naloxone. Behavioral tolerance was evident in the animals exposed to the nonfunctional hotplate, regardless of drug treatment, and was dissociated from pharmacological tolerance. It is suggested that behavioral analgesia and tolerance may involve habituation to novel distractive stimuli associated with the hotplate test environment. 12 references. (Author abstract modified)

003382 Barone, F. C.; Wayner, M. J.; Lee, H. K.; Tsai, W. H.; Dehaven, D. L.; Woodson, W., Jr. Brain Research Laboratory, Syracuse University, 601 University Avenue, Syracuse, NY 13210 **Effects of methylphenidate on food and water consumption at different body weights.** Pharmacology Biochemistry and Behavior. 10(4):591-595, 1979.

The effects of methylphenidate (1.5, 3.0, 6.0, and 12.0mg/kg i.p.)on food and water intake were examined in male hooded rats at ad lib feeding weights and in rats maintained at 80% free feeding weight by partial food deprivation. In normal weight rats, food and water consumption was decreased for 2 hours after administration of 1.5mg/kg methylphenidate, but no dose affected 24 hour food and water consumption. In rats maintained at reduced body weight, food consumption for 2 hours was significantly reduced by 12mg/kg methylphenidate. Methylphenidate had no effect on water consumption in these animals. 18 references. (Author abstract modified)

003383 Behbehani, Michael M.; Fields, Howard L. Dept. of Physiology, University of Cincinnati, College of Medicine, Cincinnati, OH 45267 **Evidence that an excitatory connection between the periaqueductal gray and nucleus raphe magnus mediates stimulation produced analgesia.** Brain Research (Amsterdam). 170(1):85-93, 1979.

Microinjection of glutamate into the periaqueductal gray (PAG) of male Sprague-Dawley rats produced an increase in the firing rate of cells in the PAG and induced analgesia, indicated by an elevated threshold for the flexion reflex in response to noxious heat. The increase in firing rate in the PAG was associated with an increase in the firing rate of the majority of cell in the nucleus raphe magnus (NRM). The effect on the flexion reflex was abolished by lesion of the NRM and a small area of the surrounding reticular formation or by intravenous administration of naloxone. These findings indicate that there is an excitatory connection between the PAG and NRM and that activation of this system causes analgesia. 29 references. (Author abstract modified)

003384 Bhattacharyya, Alok K.; Pradhan, S. N. Department of Pharmacology, Howard University College of Medicine, Washington, DC 20059 **Behavioral interactions in cocaine-treated rats.** Life Sciences (Oxford). 24(20):1855-1860, 1979.

The effects of a single dose of cocaine (10mg/kg i.p.)on spontaneous motor activity (SMA), stereotypy, self-stimulation of the posterior hypothalamus or area ventralis tegmentum, and nonreinforced bar pressing were investigated in male Wistar derived Walter Reed rats. Cocaine was followed by an initial increase in SMA and a subsequent significant decrease in SMA as stereotypy became more prominent. Cocaine also facilitated self-stimulation responding, which further increased SMA. Stereotypy disappeared completely during self-stimulation. Following cessation of self-stimulation, SMA and bar pressing decreased and stereotypy reappeared. 21 references. (Author abstract modified)

003385 Bohus, Bela; Urban, I.; van Wimersma Greidanus, Tj. B.; de Wied, D. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, Utrecht, The Netherlands **Opposite effects of oxytocin and vasopressin on avoidance behaviour and hippocampal theta rhythm in the rat.** Neuropharmacology (Oxford). 17(4/5):239-247, 1978.

The effects of oxytocin and arginine-8-vasopressin (AVP) on passive avoidance behavior and on hippocampal theta rhythm were investigated in male Wistar rats. Passive avoidance behavior as attenuated by intracerebroventricular administration of oxytocin and facilitated by AVP in a dose dependent manner. Reverse effects were found after the centrally circulating oxytocin and vasopressin were neutralized by intraventricular administration of specific antiserum to the peptides. Administration of oxytocin into a lateral ventricle resulted in a decrease of the peak frequency of hippocampal theta rhythm generated during paradoxical sleep episodes. Oxytocin antiserum increased the incidence of higher frequencies in the theta rhythm. Peripheral administration of oxytocin mimicked the effect of AVP on extinction of pole jumping avoidance behavior. Resistance to extinction rather than facilitation was observed when higher doses of oxytocin were given. Passive avoidance behavior appeared to be either facilitated or attenuated after subcutaneous oxytocin administration. It is concluded that centrally released oxytocin may be a naturally occurring amnesic neuropeptide. 41 references. (Author abstract modified)

003386 Bolas, Kim C.; Bellingham, W. P.; Martin, Gerard M. Department of Psychology, Australian National University, Canberra, A.C.T., Australia, 2600 **Aversive properties of cycloheximide versus memory inhibition in chickens' formation of visually cued food aversions.** Pharmacology Biochemistry and Behavior. 10(2):251-254, 1979.

The effects of cycloheximide (CXM) on the formation of visually cued food aversions were examined in chickens. Intracerebral injection of CXM 2 or 6 hours before feeding did not produce amnesia for a conditioned aversion produced by pairing a novel colored food with lithium chloride. Food conditioned aversions were found when CXM was substituted for lithium consumption of the novel food, but no aversions were found when CXM alone was injected 2 hours before feeding. Possible causes of the apparent memory inhibition induced by CXM in some appetitive paradigms are discussed. 18 references. (Author abstract modified)

003387 Bonetti, E. P.; Keller, H. H. Pharmaceutical Research Department, F. Hoffman-La Roche & Co. Ltd., CH-4002 Basel, Switzerland **Behavioural and biochemical effects of lisuride in the rat.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R64, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the role of the gamma-aminobutyric acid (GABA) system in female-to-female mounting behavior (MB) induced by lisuride (LIS) in rats is discussed. Pretreatment with the GABA agonist muscimol 30 minutes before LIS enhanced MB at 0.3mg/kg i.p. but attenuated MB at 1mg/kg. At high doses, the GABA-transaminase inhibitors gamma-acetylenic-GABA (50mg/kg i.p.)and L-cycloserine (100mg/kg i.p.)markedly reduced LIS-induced MB, but a low dose (10mg/kg) of L-cycloserine intensified this behavior. MB induced by p-chlorophenylalanine was almost completely blocked by muscimol (1.0mg/kg), L-cycloserine (100mg/kg), or gamma-acetylenic-GABA (50mg/kg). Results indicate that a moderate enhancement of GABA transmission increases MB, whereas a marked GABA stimulation suppresses MB. 2 references. (Author abstract modified)

003388 Brands, B.; Thornhill, J. A.; Hirst, M.; Gowdey, C. W. Department of Pharmacology, University of Western Ontario, London, Canada N6A 5C1 **Suppression of food intake and body weight gain by naloxone in rats.** Life Sciences (Oxford). 24(19):1773-1778, 1979.

The effect of acute or chronic treatment with naloxone on food acquisition and weight gains was studied in male Sprague-Dawley rats. One injection of a sparingly soluble salt of naloxone in slow release vehicle markedly lowered mean food intake and body weight, relative to vehicle treated controls. Repeated evening injections of naloxone hydrochloride in saline tended to reduce nighttime feeding throughout a 10 day period of naloxone administration, but the decreases were offset by increased daytime feeding; food intake increased when saline was substituted for naloxone. Rats treated with naloxone after 24 hours of fasting consumed significantly less food and gained less weight than rats given saline. After a 48 hour fast, the naloxone treated rats gained significantly less body weight than saline controls, but the reduction in food intake was not significant. These results suggest that endorphins may modulate feeding activity. 19 references. (Author abstract modified)

003389 Brown, Z. W.; Amit, Z.; Smith, B.; Rockman, G. Department of Psychology, Concordia University, 1455 de Maisonneuve Blvd. W., Montreal, Quebec H3G 1M8, Canada **Disruption of taste aversion learning by pretreatment with diazepam and morphine.** Pharmacology Biochemistry and Behavior. 10(1):17-20, 1979.

The effect of pretreatment with morphine, diazepam, or Ringer's solution on the development of a conditioned taste aversion (CTA) to the same or a different drug was investigated in male Wistar rats. Animals pretreated with Ringer's solution 2 hours prior to ingestion of a novel tasting saccharin solution followed by a single injection or morphine or diazepam showed a CTA, reflected in a significant reduction of mean saccharin intake on a subsequent test trial. Pretreatment with morphine (9mg/kg ip) or diazepam (4mg/kg ip) 2 and 3.5hours prior to conditioning, respectively, produced no CTA. However, the diazepam pretreatment completely blocked the development of both morphine and diazepam CTAs, and morphine pretreatment prevented the CTA induced by morphine but not by diazepam. Results are discussed in terms of the attenuating effects of the pretreatments on the relative saliency of the subsequent conditioning drug injection. 33 references. (Author abstract modified)

003390 Buck, Douglas R.; Mahoney, Arthur W.; Hendricks, Deloy G. Department of Home Economics, California State University, Chico, CA 95929 **Effects of cerebral intraventricular magnesium injections and a low magnesium diet on nonspecific excitability level, audiogenic seizure susceptibility and serotonin.** Pharmacology Biochemistry and Behavior. 10(4):487-491, 1979.

Intracerebroventricular injections of 17 or 50mcg magnesium (Mg) in artificial cerebrospinal fluid progressively depressed the nonspecific excitability level of permanently cannulated 150-200g male Sprague-Dawley rats fed a low Mg diet for 21 days. Animals fed the low Mg diet also showed an increase in brain serotonin, compared to rats fed a control diet. Weaning rats fed a low Mg diet for 2 weeks prior to injection with 25mcg Mg displayed reduced audiogenic seizure susceptibility, compared to sham injected rats. 21 references. (Author abstract modified)

003391 Byrd, Larry D. Division of Primate Behavior, Yerkes Regional Primate Research Center, Emory University, Atlanta, GA 30322 **The behavioral effects of cocaine: rate dependency or rate constancy.** European Journal of Pharmacology (Amsterdam). 56(4):355-362, 1979.

The behavioral effects of cocaine were studied in squirrel monkeys trained to press a response key under a fixed interval 8 minute schedule of electric shock presentation. The overall mean rate of responding increased at an intramusular dose of 0.03-03mg/kg and decreased at 1.0-3.0mg/kg. Increased responding during the initial and middle periods of the fixed inter-

val accounted for the increase in overall mean rate; response rate during the final two minutes of the interval did not increase at ony dose. The rate during the interval became more uniform and the pattern of postitively accelerated responding became more linear as the dose increased. At 0.3-1.omg/kg, the response rate was relatively constant and independent of the control, pre-drug rate of responding. 22 references. (Author abstract modified)

003392 Calhoun, William H.; Jones, Elizabeth A. University of Tennessee, Knoxville, TN 37916 **Serial discrimination reversal learning as a repeated-acquisition method to test drug effects.** Bulletin of the Psychonomic Society. 13(6):375-377, 1979.

A repeated acquisition procedure utilizing serial discrimination reversal (SDR) was developed to test drug effects on acquisition. Rats were trained on SDR until successive acquisitions were uniform and repeatable. Scopolamine, DL-amphetamine, and tranylcypromine were tested for effects on acquisition with this method. DL-amphetamine and tranylcypromine facilitated acquisition; scopolamine disrupted discrimination. 12 references. (Author abstract)

003393 Carney, John M.; Rosecrans, John A.; Vasko, Michael R. Department of Pharmacology, College of Medicine, University of Oklahoma, Health Sciences Center, P.O. Box 26901, Oklahoma City, OK 73190 **Barbitone-induced tolerance to the effects of sedative-hypnotics and related compounds on operant behaviour in the rat.** British Journal of Pharmacology (London). 65(2):183-192, 1979.

In nontolerant male Sprague-Dawley rats, low doses of barbitone, pentobarbitone, ethanol, and phenytoin increased operant responding, while higher doses decreased responding. Daily i.p. injections of 100mg/kg barbitone resulted in the development of functional tolerance to the drug's stimulant and depressant effects on operant responding. Functional tolerance to barbitone was not accompanied by changes in brain or plasma pharmacokinetics for the drug. Barbitone tolerant rats were cross-tolerant to the behavioral effects of pentobarbitone, ethanol, and phenytoin; dose/effect curves for these drugs were shifted to the right in tolerant rats, compared to controls. Barbitone tolerant rats were functionally cross-tolerant to ethanol, in that there was no change in the brain and blood ethanol levels at times when the degree of behavioral impairment was substantially reduced. In contrast, cross-tolerance to phenytoin appeared to be due to a decrease in brain and plasma levels (dispositional tolerance). Cross-tolerance to pentobarbitone included both functional and dispositional components. 23 references. (Author abstract modified)

003394 Carp, J. S.; Anderson, R. J. Department of Pharmacology, George Washington University Medical Center, 2300 Eye Street, NW, Washington, D.C. 20037 **The effects of phenytoin on motor function n awake cats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 237(1):139-148, 1979.

Motor function was monitored in adult cats before and after acute administration of 5, 10, or 20mg/kg phenytoin. The only significant loss in motor function was balance and coordination. Half the animals could not balance or walk along a narrow edge beam after 20mg/kg phenytoin, but their performance was not impaired after lower drug doses or on wider surfaces. Phenytoin had no effects on the righting reflex, flexor reflex, muscle strength, hopping response, blind pacing response, or visually aided placing. Results suggest that phenytoin has a selective effect on higher order neuronal systems involved with balance and locomotion rather than on simple reflect pathways. 16 references. (Author abstract modified)

003395 Carp, Jonathan S.; Anderson, Rebecca J. Department of Pharmacology, George Washington University, 2300 Eye Street, N.W., Washington, DC 20037 **Sensorimotor deficits produced by phenytoin and chlorpromazine in unanesthetized cats.** Pharmacology Biochemistry and Behavior. 10(4):513-520, 1979.

Unanesthetized adult cats were evaluated for suprasegmental reflex activity and motor skills before and after administration of chlorpromazine (0.0625-0.5mg/kg) alone and in combination with phenytoin (20mg/kg). Half the animals failed to match their control responses after administration of chlorpromazine and phenytoin. The impairment was most noticeable in the most stringent test (walking a 4cm beam), and the effects of the two drugs were additive. Neither drug affected muscle strength, but the two drugs in combination depressed the cats' motivational state, making them less willing to work against imposed loads. None of the drug treatments altered responses or flexor reflex, blind placing, hopping response, or visually aided placing tests. It is concluded that the effects of chlorpromazine and phenytoin on motor control are selective for CNS loci that control balance and coordination. Since deficits occurred only at doses well above those needed for clinical efficacy, these sensorimotor side-effects may not pose a problem in the long-term clinical use. 23 references. (Author abstract modified)

003396 Carter, C. J.; Pycock, C. J. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **Potentiation of haloperidol-induced catalepsy by dopamine agonists: possible involvement of central 5-hydroxytryptamine.** Pharmacology Biochemistry and Behavior. 10(4):475-480, 1979.

The possible role of 5-hydroxytryptamine (5-HT) in neuroleptic-induced catalepsy was examined in male Porton rats. The dopamine agonists apomorphine and d-amphetamine both potentiated the cataleptic state induced by the dopamine receptor blocker haloperidol. Given alone, none of the three drugs significantly altered 5-HT utilization and turnover. However, combinations of the dopamine agonists with haloperidol resulted in significant potentiation of cerebral 5-HT utilization. These findings suggest that the potentiation of haloperidol-induced catalepsy by amphetamine or apomorphine is related to an increase in central 5-HT utilization. It is concluded that the effects of the classical dopamine agonists on other central transmitter systems should be considered when interpreting their behavioral effects. 24 references. (Author abstract modified)

003397 Chan, Arthur W. K.; Siemens, Albert J. Research Institute on Alcoholism, 1021 Main St., Buffalo, NY 14203 **Development of acute tolerance to pentobarbital: differential effects in mice.** Biochemical Pharmacology (Oxford). 28(4):549-552, 1979.

To determine whether the selective development of acute tolerance in C56BL mice is specific to ethanol, or if it occurs with other hypnotics such as pentobarbital, male C57BL/6J and DBA/2J mice were housed singly on a 12/12 hour light/dark cycle in a controlled environmental room and received Teklad mouse diet and tap water adlib for 7 days prior to the experiment. Each mouse was injected intraperitoneally with approximately 2mCi of sodium pentobarbital 2-14C as a 0.25% w/v solution in saline at a dose of 50mg/kg. Sleep onset time and sleep were determined. A group of mice of each strain was decapitated at the time the righting reflex was lost and another group at the time the righting reflex was regained. Blood was collected at those times, and brains were removed immediately and weighed and homogenized; pentobarbital concentrations were computed. Results show that DBA mice awoke at significantly higher blood and brain pentobarbital levels than C57BL mice. For DBA mice, the brain pentobarbital concentration at awakening was significantly higher than at sleep onset, indicating the

development of acute tolerance. C57BL mice awoke at a significantly lower brain pentobarbital level than at sleep onset, suggesting no acute tolerance development. Results support the use of C57BL and DBA mice as animal models to determine relationships between voluntary ethanol intake and neural sensitivity to acute effects of ethanol, and rates of tolerance development to and physical dependence on ethanol. 12 references.

003398 Chan, Samuel H. H.; Yip, M. K. Department of Life Sciences, Indiana State University, Terre Haute, IN 47809 **Central neurotransmitter systems in the morphine suppression of jaw-opening reflex in rabbits: the cholinergic system.** Experimental Neurology. 63(2):201-210, 1979.

The involvement of the central cholinergic system in morphine suppression of the jaw opening reflex was investigated in rabbits lightly anesthetized with pentobarbital sodium. The averaged amplitude of electromyogram signals from the digastric muscle, evoked by intrapulpal stimulation, was used as the pain index. Drugs were administered directly into the cerebral circulation via a carotid artery. Morphine, 3mg/kg, had no appreciable effect on the jaw opening reflex. However, a subsequent injection of 0.1mg/kg physostigmine significantly depressed the reflex, and the physostigmine potentiated analgesia persisted after administration of 1 or 5mg/kg atropine. At a dose of 6mg/kg, morphine markedly inhibited the evoked digastric activity and this inhibition was not antagonized by atropine. It is concluded that the cholinergic system is involved in morphine suppression of the jaw opening reflex. 25 references. (Author abstract modified)

003399 Christensen, A. V.; Arnt, J.; Scheel-Kruger, J. H. Lundbeck & Co. A/S, Department of Pharmacology and Toxicology, Ottiliavej 7-9, Valby, Denmark **Decreased antistereotypic effect of neuroleptics after additional treatment with a benzodiazepine, a GABA agonist or an anticholinergic compound.** Life Sciences (Oxford). 24(15):1395-1402, 1979.

Gamma-aminobutyric acid (GABA) agonists potentiated the stereotyped gnawing induced by methylphenidate in male mice and attenuated the antagonistic effect of neuroleptics on methylphenidate-induced gnawing. Haloperidol, spiroperidol, and pimozide were profoundly antagonized by muscimol, whereas cis(Z)-flupenthixol and fluphenazine were less affected. Baclofen had no significant effect. Diazepam and scopolamine strongly antagonized the antistereotypic effect of the butyrophenone-like compounds, but only scopolamine antagonized fluphenazine and cis(Z)-flupenthixol. It is concluded that GABA agonists are likely to antagonize rather than potentiate the antipsychotic effect of neuroleptics. 37 references. (Author abstract modified)

003400 Clancy, Annette; Redfern, P. H. School of Pharmacy and Pharmacology, University of Bath, Claverton Down, Bath BA2 7AY, England **A passive avoidance response in mice -- the effects of phase-shift and chlordiazepoxide.** Journal of Pharmacy and Pharmacology (London). 30(Supplement):35P, 1978.

In a summary of a paper presented at the British Pharmaceutical Conference in Coventry, September 1978, the effects of phase shift and chlordiazepoxide on passive avoidance responding (PAR) in male CFLP mice are reported. In these animals, a 6 hour phase shift of the light/dark cycle significantly impaired PAR on a one trial passive avoidance test, indicating a deficit in acquisition or short-term memory. Chlordiazepoxide (50mcg/ml in drinking water for 3 days) had no effect on control animals, but significantly increased PAR in the phase shifted animals. 2 references. (Author abstract modified)

003401 Clarke, J. C.; Westbrook, R. F.; Irwin, J. School of Psychology, University of New South Wales, P. O. Box 1, Kensington, Sydney, N. S. W. 2033, Australia **/Visual and taste cues in lithium-chloride-induced conditioned aversion in the pigeon./** Potentiation instead of overshadowing in the pigeon. Behavioral and Neural Biology. 25(1):18-29, 1979.

Two studies of the relationship between visual and gustatory cues in lithium-chloride-induced conditioned aversion in the pigeon are described. Experiment 1 examined the relative strengths of lithium-chloride-induced visual and taste aversions. When conditioned separately, taste aversions were stronger than visual aversions. When conditioned in compound, the strong taste cue potentiated rather than overshadowed the weak visual cue. Experiment 2 provided a replication of this potentiation of a weak visual cue by a strong taste cue. These results obtained with the pigeon parallel those recently reported with the rat, wherein a strong taste potentiated rather than overshadowed a weak odor cue. Implications of these results for theories of poison based compound conditioning are discussed in terms of the relevance of the nontaste stimuli in a species' feeding behavior. 29 references. (Author abstract modified)

003402 Clineschmidt, Bradley V.; McGuffin, Jodie C.; Bunting, Patricia B. Neuropsychopharmacology Section, Merck Institute for Therapeutic Research, West Point, PA 19486 **Neurotensin: antinocisponsive action in rodents.** European Journal of Pharmacology (Amsterdam). 54(1/2):129-139, 1979.

Intracisternal administration of neurotensin in female CF1 mice resulted in increased reaction times in the hot plate test (minimum effective dose, 25ng) and decreased writhing in response to acetic acid (minimum effective dose, 0.25ng). In the hot plate test, neurotensin, (G1n4)-neurotensin, and (D-A1a2)-methionine enkephalinamide were equipotent at 0.00015, 0.015, and 1.5nmoles. Antinociceptive intracisternal doses of neurotensin also produced hypothermia and reduced locomotor activity. D,L-5-hydroxytryptophan, oxotremorine, and chlorpromazine caused hypothermia when given systemically, but did not change reaction times in the hot plate test. Even at doses as high as 2500ng, neurotensin did not disrupt coordinated motor control or change the current/response relationship for electroshock-induced seizures. The antinociceptive action of neurotensin was not antagonized by naloxone, cyproheptadine, methergoline, atropine, benztropine, mecamylamine, chlorpheniramine, pyribenzamine, cimetidine, propranolol, phenoxybenazmine, haloperidol, or indomethacin. It is suggested that the antinociceptive effect of neurotensin results from an interaction of the peptide with neurotensin specific receptor sites in the CNS. 24 references. (Author abstract modified)

003403 Cole, Sherwood O. Dept. of Psychology, Rutgers University, Camden, NJ 08102 **Interaction of food deprivation with different measures of amphetamine effects.** Pharmacology Biochemistry and Behavior. 10(2):235-238, 1979.

The effects of d-amphetamine (0.5and 1.0mg/kg i.p.)on feeding, activity, and food dish contact time were investigated in male Holtzman rats after 12, 24, or 36 hours of food deprivation. Differences in the amount of food deprivation significantly influenced the drug's effect on feeding and food dish time, but not on activity. Differences in the amount of food dish time also significantly influenced the correlations between drug effects on activity and food dish contact time and on food dish contact time and feeding. These results suggest that concurrent assessment of amphetamine's effects on various behaviors may provide more meaningful information about the drug's effects than do independent assessments of drug effects on isolated behaviors. 12 references. (Author abstract modified)

003404 Colpaert, Francis C.; Niemegeers, Carlos J. E.; Janssen, Paul A. J. Department of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Discriminative**

stimulus properties of cocaine: neuropharmacological characteristics as derived from stimulus generalization experiments. Pharmacology Biochemistry and Behavior. 10(4):535-546, 1979.

The neuropharmacological characteristics of drugs inducing stimulus generalization with cocaine as a cue were examined in male Wistar rats. D-amphetamine (0.17mg/kg), l-amphetamine (0.45mg/kg), methylamphetamine (0.15mg/kg), methylphenidate (0.55mg/kg), and nomifensine (0.32mg/kg) induced stimulus generalization with cocaine in rats trained to discriminate 10mg/kg cocaine from saline. Amantidine, apomorphine, piribedil, and bromocriptine also induced stimulus generalization to some extent, but this was invariably associated with severe rate depressant effects. Hydroxyamphetamine, in a dose of 10mg/kg but not 1.25mg/kg, induced generalization in 3 of 8 rats. Tranylcypromine (2.5mg/kg), fentanyl (0.068mg/kg), morphine (10mg/kg), phencyclidine (0.81mg/kg), dexetimide (0.44mg/kg), and benztropine (9.2mg/kg) induced stimulus generalization with cocaine, whereas lidocaine, procaine, chlordiazepoxide, imipramine, desipramine, mescaline, lysergic acid diethylamide, isopropramide, and atropine did not. Propranolol (1.25-40mg/kg) and isoproterenol (0.63-2.5mg/kg) induced a biphasic generalization with cocaine. Rats trained to discriminate propranolol from saline generalized their training along a linear gradient, but generalized cocaine along a biphasic gradient. Results suggest that stimulus generalization with cocaine may be contingent on increasing the functional availability of endogenous dopamine and possibly of norepinephrine, irrespective of the presynaptic mechanism involved. 64 references. (Author abstract modified)

003405 Cory-Slechta, Deborah A.; Thompson, Travis. Depart. of Radiation Biology and Biophysics, School of Medicine and Dentistry, University of Rochester, Rochester, NY 14642 **Behavioral toxicity of chronic postweaning lead exposure in the rat.** Toxicology and Applied Pharmacology. 47(1):151-159, 1979.

The effects of chronic postweaning exposure to 50, 300, or 1000ppm lead acetate in drinking water on responding maintained by a fixed interval, 30 second food reinforcement schedule in male Sprague-Dawley rats were examined. Exposure to 50 and 300ppm lead acetate increased response rates and intersubject variability and decreased latency (time to initiation of responding in the interval). Exposure to 1000ppm lead acetate initially decreased rates and increased latency values. Following termination of exposure to 50ppm, response rates and latency values gradually returned to control levels. Behavioral effects produced by exposure to 50 and 300ppm were similar in magnitude but varied in time of onset and decline, indicating that lead produced time dependent rather than concentration dependent effects. 23 references. (Author abstract modified)

003406 Costall, Brenda; Naylor, Robert J.; Nohria, Virinder. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, West Yorkshire, England **Hyperactivity response to apomorphine and amphetamine in the mouse: the importance of the nucleus accumbens and caudate-putamen.** Journal of Pharmacy and Pharmacology (London). 31(4):259-261, 1979.

The hyperactivity response to apomorphine and amphetamine was invstigated in male BKW mice with lesions of the nucleus accumbens or caudate-putamen. Bilateral lesions of the nucleus accumbens significantly reduced the climbing response to 0.5-1.5mg/kg apomorphine, relative to sham operated or solvent treated control animals. No climbing behavior was seen after apomorphine in mice with bilateral lesions of the caudate-putamen. Amphetamine (2.0mg/kg) enhanced activity of control mice but not that of animals with bilateral lesions of the nucleus accumbens. Bilateral lesions of the caudate-putamen failed to modify the response to amphetamine. Results indicate that the nucleus accumbens is involved in the mediation of apomorphine climbing in mice. Apomorphine and amphetamine appear to affect the function of the nucleus accumbens via different mechanisms, with the apomorphine effects being more appropriate for the detection of antischizophrenic drug activity. 11 references.

003407 Davis, Michael. Connecticut Mental Health Center, 34 Park Street, New Haven, CT 06508 **Morphine and naloxone: effects on conditioned fear as measured with the potentiated startle paradigm.** European Journal of Pharmacology (Amsterdam). 54(4):341-347, 1979.

The effects of morphine and naloxone on conditioned fear were investigated in male Sprague-Dawley rats, using the potentiated startle paradigm (increase in acoustic startle in the presence of a light previously paired with shock). Morphine (0.6-10mg/kg i.p.)produced a dose dependent reduction in the potentiated startle effect, but did not appreciably depress baseline levels of startle. Naloxone (2mg/kg i.p.)did not significantly affect potentiated startle, but antagonized the ability of morphine (10mg/kg) to block potentiated startle. Morphine did not block potentiated startle by potentiating extinction. The advantages of this paradigm for studying fear or anxiety are discussed. (Author abstract modified)

003408 Davis, W. M.; Bedford, J. A.; Buelke, J. L.; Guinn, M. M.; Hatoum, H. T.; Waters, I. W.; Wilson, M. C.; Braude, M. C. Dept. of Pharmacology, School of Pharmacy, University of Mississippi, University, MS 38677 **Acute toxicity and gross behavioral effects of amphetamine, four methoxyamphetamines, and mescaline in rodents, dogs, and monkeys.** Toxicology and Applied Pharmacology. 45(1):49-62, 1978.

Mescaline (MES) and d-amphetamine (AMP) served as reference agents in a study of acute toxic and behavioral effects of four methoxy derivatives of AMP: dl-4-methoxyamphetamine (PMA), dl-2,5-dimethoxyamphetamine (DMA), dl-2,5-dimethoxy-4-bromoamphetamine (DOB), and dl-2,5-dimethoxy-4-methylamphetamine (DOM). Mean lethal dose values or lethal dose range were determined in mice, rats, dogs, and rhesus monkeys. MES was consistently the least toxic agent, whereas DOB and DOM were the most toxic for all species except the mouse. AMP was the most toxic for the mouse and was third in toxicity for all other species. The effects of lethal and sublethal doses of these agents on automatic, motor, and CNS functions and on behaviors possibly correlating with human hallucinogenic effects were also examined. The resulting behavioral profiles indicated that DMA, DOM, and DOB had effects most similar to those of MES, whereas PMA had more in common with AMP. However, PMA, like the other three derivatives and mescaline, caused visual tracking in monkeys and dogs, possibly reflecting a hallucinatory action. 21 references. (Author abstract modified)

003409 Delini-Stula, A.; Vassout, A.; Radeke, E.; Ortmann, R. Research Dept., Pharmaceutical Division, CIBA-Geigy AG, CH-4002 Basel, Switzerland **Psychopharmacological profile of beta2-receptor stimulants.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R65, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the potencies of the nonselective beta-adrenergic agonist isoprenaline (ISO) and the selective beta2-receptor stimulants terbutaline (TER) and salbutamol (SAL) in psychopharmacological screening tests for antidepressant activity are reported. All three compounds antagonized reserpine-induced hypothermia in mice in doses between 10 and 50mg/kg i.p..None of the drugs reversed tetrabenazine-induced ptosis in rats up to 100mg/kg i.p.,but SAL was the most effective in inhibiting tetrabenazine-induced catalepsy (30-100mg/kg i.p.). In a

dose range of 3-30mg/kg i.p.,all three drugs antagonized the hypothermia induced by 10mg/kg subcutaneous apomorphine. The 5-hydroxytryptophan (5-HTP) head twitch syndrome in mice was reversed by all three drugs, with SAL being the most effective. The 5-HTP excitation syndrome in rats was potentiated to the same degree by ISO, SAL, and TER. Results indicate that at high doses, the beta2-receptor stimulants have psychopharmacological profiles similar to those of known antidepressnat drugs. 1 reference. (Author abstract modified)

003410 Dickenson, Anthony H.; Oliveras, Jean-Louis; Besson, Jean-Marie. Unite de Recherches de Neurophysiologie Pharmacologique de l'INSERM, U 161, F-75014 Paris, France **Role of the nucleus raphe magnus in opiate analgesia as studied by the microinjection technique in the rat.** Brain Research (Amsterdam). 170(1):95-111, 1979.

The analgesic effects of morphine (5mcg) microinjected into the nucleus raphe magnus (NRM) and the surrounding reticular formation of male Sprague-Dawley rats were tested, using volcalization after electric tailshock as the test for analgesia. Powerful analgesic effects were obtained only with sites in the NRM, and the analgesic effects could be reversed by systemic naloxone. Pretreatment with systemic cinanserin, a blocker of serotonergic receptors, led to a pronounced diminution of the analgesic effects of morphine. Microinjection of naloxone (5mcg) diminished the analgesia produced by 3mg/kg i.v. morphine and almost completely reversed the effects of 1.5mg/kg i.v. morphine. These results substantiate the role of the NRM in analgesic mechanisms. 59 references. (Author abstract modified)

003411 Drucker-Colin, Rene; Zamora, Jorge; Bernal-Pedraza, Jose; Sosa, Beatriz. Departamento de Biologia Experimental, Instituto de Biologia, Universidad Nacional Autonoma de Mexico, Mexico 20, D.F., Mexico **Modification of REM sleep and associated phasic activities by protein synthesis inhibitors.** Experimental Neurology. 63(3):458-467, 1979.

The sleep/waking cycle and multiple unit activity were studied in cats after various doses of protein synthesis inhibitors (anisomycin and chloramphenicol). The protein synthesis inhibitors decreased total rapid eye movement (REM) sleep time, without altering slow wave sleep time. The reduction in REM sleep was due to a decrease in the frequency of REM periods rather than to a decrease in their duration. The protein synthesis inhibitors also decreased phasic REM sleep and prolonged tonic REM periods. The phasic bursts of multiple unit activity normally seen during REM sleep were virtually absent after the administration of protein synthesis inhibitors. Results indicate that protein molecules may participate in the mechanisms that trigger REM sleep. 21 references. (Author abstract modified)

003412 Dykstra, Linda A. Department of Psychology, 013A, University of North Carolina, Chapel Hill, NC 27514 **Effects of morphine, diazepam and chlorpromazine on discrimination of electric shock.** Journal of Pharmacology and Experimental Therapeutics 209(2):297-303, 1979.

The effects of morphine, diazepam, and chlorpromazine on the discrimination of electric shock were examined in squirrel monkeys. Morphine decreased the percentage of correct responses at both the lower (0.05-0.15mA) and higher (0.35mA) shock intensities, but the effects at the higher intensity were very slight. Morphine had little effect on correct responses in the absence of shock. Diazepam decreased the percentage of correct responses in the absence of shock without affecting correct responses in the presence of shock. Chlorpromazine decreased the percentage of correct responses in the presence or absence of shock. All three drugs increased response time, with chlorpromazine producing the largest increase. 34 references. (Author abstract modified)

003413 Edwards, Joseph Daniel; Eckerman, David A. University of North Carolina, Chapel Hill, NC 27514 **Effects of diazepam and ethanol alone and in combination on conditioned suppression of key-pecking in the pigeon.** Pharmacology Biochemistry and Behavior. 10(2):217-221, 1979.

The effects of diazepam and ethanol on conditioned suppression of keypecking were investigated in male white Carneaux pigeons. The birds were intermittently given grain reinforcement for keypecks; occasional 30 second keylight changes (warning stimulus) were followed by a brief electric shock, which suppressed responding during the warning stimuli. This suppression was reduced by diazepam and ethanol, but combinations of the two drugs did not reduce the suppression (antagonistic effect). Each drug reduced responding in the absence of the warning stimulus, and combinations of the drug produced still greater reductions in this safe period responding (synergistic effect). These findings are discussed in relation to anxiety in humans, and it is suggested that ethanol and diazepam in combination are less effective than either drug given alone in providing relief from anxiety. 16 references. (Author abstract modified)

003414 Ellinwood, Everett H., Jr.; Kilbey, M. Marlyne. Behavioral Neuropharmacology Section, Dept. of Psychiatry, Duke University Medical Center, Durham, NC 27706 **Alteration in motor frequencies with dopamine agonists and antagonists.** Psychopharmacology Bulletin. 15(2):49-50, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, alteration in motor frequencies with dopamine agonists and antagonists is reported. Three experiments investigating the effects on motor frequencies of d-amphetamine, pimozide plus d-amphetamine, and clozapine plus d-amphetamine, using a transducer designed to allow quantification of the intrinsic frequency of normal and abnormal movements, are described. Data question a singular interpretation of therapeutic efficacy as secondary to mesolimbic dopamine blocking actions of neuroleptics. 8 references.

003415 Epstein, Paul N.; Altshuler, Harold L. Texas Research Institute of Mental Sciences, Houston, TX 77030 **Altered response to apomorphine and haloperidol after nine days of cocaine injections.** Pharmacology Biochemistry and Behavior. 10(2):189-193, 1979.

Male Sprague-Dawley rats pretreated with nine daily injections of 20mg/kg cocaine or saline were tested for behavioral responses to apomorphine, haloperidol, and cocaine 24 hours after the last pretreatment injection. The cocaine pretreated rats were more sensitive to haloperidol-induced catalepsy, less responsive to some of the sterotypic effects of apomorphine, and similar to saline controls in responses to the anticataleptic properties of cocaine. These findings suggest that subsensitivity rather than supersensitivity to dopamine may develop during chronic cocaine administration. 22 references. (Author abstract modified)

003416 Esposito, Ralph U.; McLean, Stafford; Kornetsky, Conan. Boston University School of Medicine, Department of Psychiatry, Laboratory of Behavioral Pharmacology, Boston, MA 02118 **Effects of morphine on intracranial self-stimulation to various brain stem loci.** Brain Research (Amsterdam). 168(2):425-429, 1979.

The effects of morphine on thresholds for self-stimulation of the ventral tegmentum, mesencephalic central gray, and locus

coeruleus were examined in male CDF rats. In all animals, low doses of morphine caused a decrease in threshold, while higher doses initially resulted in no threshold change or in slight increases in threshold. Tolerance was not observed to the threshold lowering effects seen after low doses. However, tolerance did develop to the threshold elevating effect of the higher doses; the high doses that initially elevated the threshold produced lowered thresholds after chronic administration. 18 references.

003417 Estevez, Vicente S.; Ho, Beng T.; Englert, Leo F. Texas Research Institute of Mental Sciences, Houston, TX 77030 **Metabolism correlates of cocaine-induced stereotypy in rats.** Pharmacology Biochemistry and Behavior. 10(2):267-271, 1979.

An increase in stereotyped behavior was observed in rats injected daily with cocaine (40mg/kg i.p.), compared with the acute response to the drug. The increase persisted for 14 days after discontinuation of the drug treatment, and corresponded to increased levels of cocaine, norococaine, and benzoylecgonine in brain. Pretreatment with SKF-525A, an inhibitor of cocaine demethylation, produced a decrease in the stereotypy rating and lower level of norcocaine in the brain. The role of this metabolite in the production of cocaine-induced stereotyped behavior is discussed. 19 references. (Author abstract modified)

003418 Estler, C. -J. Institute of Pharmacology and Toxicology, University of Erlangen-Nurnberg, Universitatsstr. 22, D-8520 Erlangen, Germany **Influence of pimozide on the locomotor hyperactivity produced by caffeine.** Journal of Pharmacy and Pharmacology (London). 31(2):126-127, 1979.

The effect of pimozide on caffeine-induced motor stimulation in male mice was investigated. Pretreatment with 1mcg/g subcutaneous pimozide completely abolished the stimulatory effects of 25 or 50mcg/g subcutaneous caffeine. A lower dose of pimozide (0.3mcg/g) abolished the effect of 25mcg/g but not of 50mcg/g caffeine. It is concluded that dopaminergic mechanisms cannot be solely responsible for the central stimulatory effects of caffeine. 17 references.

003419 Etscorn, Frank; Parson, Patricia. Dept. of Psychology, New Mexico Institute of Mining and Technology, Socorro, NM 87801 **Taste aversion in mice using phencyclidine and ketamine as the aversive agents.** Bulletin of the Psychonomic Society. 14(1):19-21, 1979.

The ability of phencyclidine and ketamine to induce taste aversions following a single conditional pairing of a novel taste with a delayed drug reaction was assessed. Over the course of four preference tests, the ketamine injected animals evidenced a slight extinction effect that did not occur in the phencyclidine injected mice. The results are discussed in relation to prior phencyclidine taste aversion research using rhesus monkeys. 21 references. (Author abstract modified)

003420 Fielding, Stuart; Wilker, Jeffrey; Hynes, Martin; Szewczak, Mark; Novick, William J., Jr.; Lal, Harbans. Hoechst-Roussel Pharmaceuticals, Somerville, NJ 08876 **A comparison of clonidine with morphine for antinociceptive and antiwithdrawal actions.** Journal of Pharmacology and Experimental Therapeutics. 207(3):899-905, 1978.

Clonidine showed dose dependent analgesic and antiwithdrawal activity in standard laboratory tests in rodents. In male Swiss CD-1 mice, clonidine prolonged the tail flick latency and inhibited phenylquinone-induced writhing. In female Wistar rats, the drug inhibited tail withdrawal from hot water and a pain response to pressure application on an inflamed paw. Effective analgesic doses of clonidine were consistently smaller than those of morphine. Naloxone failed to antagonize the analgesic actions of clonidine but effectively antagonized those of morphine. Phenoxybenzamine also failed to alter the effect of clonidine in the tail flick test. In male hooded Long-Evans rats, clonidine suppressed morphine withdrawal body shakes in a dose dependent manner, and this action was not antagonized by naloxone. 37 references. (Author abstract modified)

003421 File, Sandra E. Department of Pharmacology, School of Pharmacy, University of London, Brunswick Square, London WC1, England **Effects of ACTH4-10 in the social interaction test of anxiety.** Brain Research (Amsterdam). 171(1):157-160, 1979.

The effect of adrenocorticotrophic hormone fragment ACTH4-10 on the behavior of pairs of male hooded rats in a social interaction test of anxiety was examined. ACTH4-10 did not significantly reduce the level of locomotor activity, but did significantly reduce active social interaction (indicating anxiety) in all conditions. In contrast, ACTH4-10(D), in which D-phenylalanine was substituted for L-phenylalanine at amino acid position 7, reduced locomotor activity as well as social interaction. The behavioral effects of ACTH4-10 (reduced interaction and normal locomotion) were similar to those reported for ACTH1-24 (corticotrophin). This similarity in profiles suggests that the changes in social behavior result from the action of a fragment of ACTH on the CNS are not secondary to glucocorticoid release. 10 references.

003422 Fink, J. Stephen; Smith, Gerard P. Dept. of Psychiatry, Cornell University Medical College, New York, NY 10021 **Decreased locomotor and investigatory exploration after denervation of catecholamine terminal fields in the forebrain of rats.** Journal of Comparative and Physiological Psychology. 93(1):34-65, 1979.

Locomotor and exploratory behaviors were examined after bilateral microinjections of 6-hydroxydopamine into two hypothalamic sites that produced diffferent patterns of denervation of forebrain catecholamine terminal fields. After anterolateral injections, rats locomoted and reared less in a novel open field, responded abnormally to changes in the degree of novelty of the open field, and investigated a novel object less. These are deficits in exploratory behavior because they were not secondary to the inhibition of open field behavior by hyperemotionality, by general motor disability, or by the failure to detect novel spaces or objects. A critical forebrain catecholaminergic innervation for exploratory responses to novel stimuli may be within areas that were denervated by anterolateral but not by anteromedial hypothalamic 6-hydroxydopamine injections. These areas are mesolimbic, mesocortical, anteromedioventral, and anterolateral hypothalamic terminal fields. 54 references. (Author abstract modified)

003423 Fink, J. Stephen; Smith, Gerard P. Dept. of Psychiatry, Cornell University Medical College, New York, NY 10021 **L-dopa repairs deficits in locomotor and investigatory exploration produced by denervation of catecholamine terminal fields in the forebrain of rats.** Journal of Comparative and Physiological Psychology. 93(1):66-73, 1979.

The effects of L-dopa in repairing deficits in locomotor and investigatory exploration produced by denervation of catecholamine terminal fields in the forebrain of rats via microinjections of 6-hydroxydopamine into the anterolateral hypothalamus were investigated. Results suggest that L-dopa repaired locomotor and investigatory exploration deficits by increasing central catecholamines at the denervated catecholamine receptor sites in the forebrain. These data support the hypothesis that forebrain catecholamine synaptic action is necessary for normal exploratory behavior. 22 references. (Author abstract modified)

003424 Florence, A. T.; Vezin, W. R.; Ray-Johnson, M. L.; Stevens, H. N. E. Department of Pharmaceutics, University of Strathclyde, Glasgow G1 7XW, Scotland **Intramuscular formulations of fluphenazine and their duration of activity in the rat.** Journal of Pharmacy and Pharmacology (London). 30(Supplement):28P, 1978.

In a summary of a paper presented at the British Pharmaceutical Conference in Coventry, September 1978, a study of long acting intramuscular formulations of fluphenazine is described. The Tenen box for measuring the effect of psychotropic agents (by degree of abolition of conditioned avoidance of electric shocks) was used to measure the duration of activity of formulations of fluphenazine and its compounds in rats. Formulations studied included solutions of a range of esters of fluphenazine in gelled and ungelled oils, aqueous suspensions of polymerized fluphenazine esters, solid suspensions of fluphenazine. Results indicate that the commercially popular oil formulations are the least promising means of further extending the duration of fluphenazine activity. 1 reference. (Author abstract modified)

003425 Foreman, M. M.; Moss, R. L. Department of Physiology, University of Texas Health Science Center, Dallas, TX 75235 **Roles of gonadotropins and releasing hormones in hypothalamic control of lordotic behavior in ovariectomized, estrogen-primed rats.** Journal of Comparative and Physiological Psychology. 93(3):556-565, 1979.

Intrahypothalamic effects of gonadotropins (luteinizing hormone, LH, and follicle stimulating hormone, FSH), thyrotropin releasing hormone (TRH), and luteinizing hormone releasing hormone (LRH) on lordotic behavior were evaluated in ovariectomized rats maintained at different levels of receptivity. Under conditions of low receptivity, medial optic area (MPOA) infusions of LH caused significant depression of lordotic response, while LH infusion into the arcuate ventromedial area (AVA) had no significant effect. FSH infusions into either area did not alter behavioral response. Under conditions of higher receptivity, MPOA or AVA infusions of either LH or TRH depressed lordotic behavior significantly, while neither LRH nor FSH inhibited behavioral response. Infusions of LRH into the MPO or the AVA significantly enhanced mating behavior, while the addition of either TRH or LH to the LRH infusates abolished this response. The addition of FSH to LRH infusates neither enhanced nor depressed response to MPOA or AVA infusates of LRH. Results suggest that the antagonistic relations between LRH and LH may represent a mechanism for the activation and coordination of sexual receptivity during ovulation. 55 references. (Author abstract modified)

003426 Frenk, Hanan; Rogers, Gerlinda H. Dept. of Psychology, Tel Aviv University, Ramat Aviv, Israel **The suppressant effects of naloxone on food and water intake in the rat.** Behavioral and Neural Biology. 26(1):23-40, 1979.

The effects of systemic administration of naloxone to food deprived or water deprived male, Sprague-Dawley rats in suppressing food and water intake in a dose dependent manner was investigated. Administration of as little as .1mg/kg naloxone significantly reduced water intake. Morphine was found to also reduce water intake in a dose related manner. However, when morphine and naloxone are given together at various doses, a competitive interaction is observed, suggesting that the suppressant effects of these drugs are, in part mediated by the same opiate receptors. High but not low doses of naloxone induce conditioned taste aversion; thus, sickness may be the cause of the suppressant effects of high, but not low, doses of the drug. Results are discussed in relation to the hypothesis that endogenous opioid substances mediate drive reduction reward. 45 references. (Author abstract modified)

003427 Frey, H.- H.; Popp, Claudia; Loscher, W. Lab. of Pharmacology and Toxicology, School of Veterinary Medicine, Free University Berlin, Koserstr. 20, D-1000 Berlin 33, Germany **Inhibitors of high affinity GABA uptake and convulsant thresholds in mice.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R63, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of inhibitors of high affinity gamma-aminobutyric acid (GABA) uptake (nipecotic acid, guvacine, and cis-4-hydroxynipecotic acid) on threshold for electroshock and pentetrazole induced convulsions in mice are reported. The drugs were injected in the form of their methyl and ethyl esters, at a dose of 0.22mM.kg i.p.,30 minutes prior to testing. The resulting elevations in convulsant thresholds correlated well with the in vitro potency of the inhibitors; (-)-nipecotic acid ethyl ester had the most pronounced effect. The effects on convulsant thresholds were not paralleled by alterations of the GABA levels in brain or the activities of glutamic acid decarboxylase (GAD) or GABA-alpha-oxoglutarate amino transferase. The GABA agonist muscimol (5.5mM/kg i.p.)also elevated convulsant thresholds; this effect was accompanied by a lowered GABA level in brain and reduced GAD activity. Results suggest that GABA is involved in the regulation of seizure susceptibility and in the pathogenesis of epileptic disorders. (Author abstract modified)

003428 Fuchs, V.; Coper, H. Institut fur Neuropsychopharmakologie, Freien Universitat Berlin, D-1000 Berlin 19, Ulmenallee 30, Germany **Is the rat a suitable subject for the investigation of psychic dependence?** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R67, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the suitability of rats as subjects in studies of psychic drug dependence is discussed. Wistar rats were subjected to five cycles of forced levorphanol drinking and withdrawal. The animals were then given free choice between a levorphanol/sucrose solution and water; the rats had to climb 50cm high in the cage to reach the water bottle. After an initial preference for levorphanol/sucrose on the first day of free choice, the rats showed an increasing preference for water, in spite of the difficulties in reaching it and in spite of signs of levorphanol withdrawal. It is concluded that a high degree of physical dependence on levorphanol withdrawal. It is concluded that a high degree of physical dependence on levorphanol is not necessarily associated with a preference for the drug in Wistar rats. (Author abstract modified)

003429 Fuller, Ray W.; Clemens, James A.; Kornfeld, Edmund C.; Snoddy, Harold D.; Smalstig, E. Barry; Bach, Nicholas J. Lilly Research Laboratories, Eli Lilly Company, Indianapolis, IN 46206 **Effects of (8beta) 8 ((methylthio)methyl) 6 propylergoline on dopaminergic function and brain dopamine turnover in rats.** Life Sciences (Oxford). 24(4):375-382, 1979.

A new synthetic ergoline, (8beta)-8-((methylthio)methyl)-6-propylergoline, induced contralateral turning in male rats with nigrostriatal lesions, lowered serum prolactin in reserpinized rats, caused stereotyped hyperactivity, and decreased dopamine turnover in brain. Whole brain concentrations of the dopamine metabolite, 3,4-dihydroxyphenylacetic acid (DOPAC) were decreased after doses of the synthetic ergoline as low as 0.003mg/kg, and the decrease persisted for up to 16 hours after a 0.3mg/kg dose. The new synthetic ergoline had less effect than a structurally related compound, lergotrile, on 3-methoxy-4-hydroxyphenyl-ethyleneglycol sulfate levels in whole brain and did not affect 5-hydroxy-indoleacetic acid levels over a dose range of

.01-10mg/kg. The behavioral and neuroendocrine effects of this new ergoline compound and its reduction of dopamine turnover in rat brain indicate that it is a potent dopamine receptor agonist in vivo. 15 references. (Author abstract modified)

003430 Fuller, Terry A.; Olney, John W. Washington University School of Medicine, Department of Psychiatry, 4940 Audubon Avenue, St. Louis, MO 63110 **Effects of morphine or naloxone on kainic acid neurotoxicity.** Life Sciences (Oxford). 24(19):1793-1798, 1979.

The effects of morphine and naloxone on the neurotoxicity induced in male Sprague-Dawley rats by intraperitoneal of subcutaneous administration of 5-12mg/kg kainic acid (KA) were examined. KA induced a syndrome of wet dog shakes (WDS), convulsions, and brain damage; low doses induced only WDS, while progressively higher doses were associated with an increasing incidence of WDS together with convulsions and brain damage. Pretreatment with naloxone (4mg/kg) 5 minutes prior to KA (12mg/kg) resulted in a moderate reduction in the incidence of WDS, convulsions, and brain damage. Morphine (5 or 1omg/kg) given 10 minutes prior to KA (7mg/kg) markedly enhanced the neurotoxicity of KA: the incidence of convlusions and brain damage increased from 7% after KA alone to 100% after KA and morphine. The possible involvement of opiate or glutamate receptors in the interaction of morphine and naloxone with KA is discussed. 18 references. (Author abstract modified)

003431 Geissler, H. E. Pharmakologisches Institut fur Naturwissenschaftler der Johann Wolgang Goethe-Universitat, Sandhofstrasse 75 A, D-6000 Frankfurt, Germany **The mode of action of 3-(2-(dipropylamino)ethyl)phenol, a new selective dopaminergic agent.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R61, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the behavioral effects of 3-(2-(dipropylamino)ethyl)phenol (DPMT), a selective dopaminergic agent, are described. DPMT induced stereotyped behavior in rats, reduced motor activity in mice, and evoked emesis in dogs; these effects were antagonized by haloperidol. DPMT also induced stereotyped behavior and hyperactivity after pretreatment with reserpine and alpha-methyltyrosine, indicating that DPMT acts as a direct central dopaminergic stimulant. However, DPMT did not stimulate striatal dopamine sensitive adenylate cylase in vitro. Results indicate that the monophenolic substance DPMT has postsynaptic activity and that the catechol moiety and cyclic adenosine monophosphate are not essential for this activity. (Author abstract modified)

003432 Geller, E. B.; Durlofsky, L.; Cowan, A.; Harakal, C.; Adler, M. W. Department of Pharmacology, Temple University School of Medicine, Philadelphia, PA 19140 **The effect of pentobarbital on the antinociceptive action of morphine in morphine-tolerant and non-tolerant rats.** Life Sciences (Oxford). 25(2):139-145, 1979.

The interaction of sodium pentobarbital with morphine sulfate was investigated in morphine tolerant and nontolerant rats, using the tail compression test for analgesia. Male Sprague-Dawley rats were given pentobarbital (4, 8, or 16mg/kg) 5 minutes before morphine (2, 4, 6, or 8mg/kg). Sodium pentobarbital, in the subanesthetic doses used, had neither antinociceptive nor hyperanalgesic properties. The barbiturate had no effect on the antinociceptive action of morphine in either morphine tolerant or nontolerant rats. 22 references. (Author abstract modified)

003433 Gessa, G. L.; Paglietti, E.; Quarantotti, B. Pellegrini. Institute of Pharmacology, University of Cagliari, Cagliari, Italy **Induction of copulatory behavior in sexually inactive rats by naloxone.** Science. 204(4389):203-205, 1979.

The effect of D-Ala2-Met-enkephalinamide (DALA) on the copulatory behavior of sexually active rats and that of naloxone on the copulatory behavior of sexually inactive ones was investigated. The intraventricular injection of DALA inhibits copulatory behavior in sexually vigorous male rats in doses which do not influence motor activity of feeding behavior. This effect is prevented by naloxone, a specific inhibitor of opioid receptors. In addition, injections of naloxone induce copulatory behavior in sexually inactive male rats. These results suggest that endorphins play an important role in the regulation of sexual behavior. 10 references. (Author abstract modified)

003434 Geyer, Mark A.; Peterson, Lyle R.; Rose, Gary J.; Horwitt, David D.; Light, Roger K.; Adams, Lynne M.; Zook, John A.; Hawkins, Richard L. Department of Psychiatry (M-003), UCSD School of Medicine, La Jolla, CA 92093 **The effects of lysergic acid diethylamide and mescaline-derived hallucinogens on sensory-integrative function: tactile startle.** Journal of Pharmacology and Experimental Therapeutics. 207(3):837-847, 1978.

Tactile startle responding in male Sprague-Dawley rats given 60 presentations of air-puff stimuli was measured after i.p. administration of graded doses of hallucinogens and other psychoactive drugs. All of the active phenylethylamines tested (mescaline, 2,5-dimethoxy-4-methylamphetamine, and its congeners) increased startle response magnitudes through the test, suggesting that the drugs increased reactivity. None of the indoleamine hallucinogens (lysergic acid diethylamide, LSD, N,N-dimethyltryptamine, and psilocin) increased startle responding. Of the nonhallucinogenic drugs tested, only apomorphine increased startle responding; clonidine significantly decreased responding, while amphetamine, chlorimipramine, scopolamine, and methysergide had no effect. In additional studies with LSD, the hallucinogen increased the response only to the first stimulus when more intense air puffs were used. LSD also impaired the habituation evident in controls when the number of stimuli was increased from 60 to 240; the response magnitudes of LSD treated rats decreased by 32% across the session, compared to a 70% decrease in controls. Results suggest that LSD and phenylethylamine derived hallucinogens may differ in their effects on tactile startle responding. 52 references. (Author abstract modified)

003435 Geyer, Mark A.; Rose, Gary J.; Petersen, Lyle R. Department of Psychiatry, School of Medicine (M-003), University of California at San Diego, La Jolla, CA 92093 **Mescaline increases startle responding equally in normal and raphe-lesioned rats.** Pharmacology Biochemistry and Behavior. 10(2):293-298, 1979.

To determine the role of serotonin containing cells of the midbrain in mediating the effects of mescaline on startle responding, electrolytic lesions were made in either the dorsal or median raphe nucleus in male Sprague-Dawley rats. Median raphe lesions increased the magnitudes of startle response to air puff stimuli in tests 1 week later, whereas dorsal raphe lesions had no effect. Mescaline produced comparable (25%) increases in startle magnitudes in both sham and raphe lesioned rats, despite the difference in baseline startle magnitudes. These findings suggest that the midbrain raphe nuclei do not mediate the increased startle responding produced by mescaline. 32 references. (Author abstract modified)

003436 Gianutsos, Gerald; Moore, Kenneth E. Section of Pharmacology, University of Connecticut College of Pharmacy, Storrs, CT 06268 **Tolerance to the effects of baclofen and gamma-**

butyrolactone on locomotor activity and dopaminergic neurons in the mouse. Journal of Pharmacology and Experimental Therapeutics. 207(3):859-869, 1978.

Acute injectons of baclofen or gamma-butyrolactone (GBL) into male ICR mice caused dose dependent depression of locomotor activity accompanied by an elevation of the dopamine content and a reduction of dopamine turnover in the brain. An acute injection of baclofen, but not GBL, was less effective in producing these effects in mice maintained on a diet containing baclofen for 10-12 days, suggesting that baclofen and GBL influence dopaminergic neurons by different mechanisms. Acute injections of baclofen or GBL were less effective in producing behavioral and neurochemical effects in mice pretreated for 13 days with injections of GBL. Tolerance to the behavioral and neurochemical effects of baclofen and GBL appeared to be due to changes in the properties of dopamine neurons rather than to metabolic tolerance. 50 references. (Author abstract modified)

003437 Ginos, James Z.; Doroski, David. Department of Neurology, Cornell University Medical College, 515 E. 71st Street, Room S700D, New York, NY 10021 **Dopaminergic antagonists: effects of 1,2,3,4-tetrahydroisoquinoline and its N-methyl and N-propyl homologs on apomorphine- and L-dopa-induced behavioral effects in rodents.** Journal of Pharmacology and Experimental Therapeutics 209(1):79-86, 1979.

Intraperitoneally administered N-methyl-1,2,3,4-tetrahydroisoquinoline (MTIQ) antagonized apomorphine (APO) induced stereotypy in a dose related manner in male Sprague-Dawley rats and attenuated L-dopa-induced hyperactivity in mice. APO-induced stereotypy was also blocked by 1,2,3,4-tetrahydroisoquinoline (TIQ) and its N-n-propyl homolog. No significant difference in amounts of radioactivity in brain homogenates from rats pretreated with MTIQ and saline was found after injection with 3H-APO, indicating MTIQ did not antagonize the behavioral effects of APO by blocking its entry into the brain. Mice fed ad libitum for 90 days with laboratory chow mixed with TIQ (5.0mg/g) displayed behavioral sensitivity when injected with L-dopa (0.40g/kg i.p.)after carbidopa pretreatment. This was paralleled by a significant increase in dopamine related adenylate cyclase activity in homogenates of caudate nuclei. The similarity between the behavioral effects induced by some neuroleptics and those observed with TIQ and its homologs suggest that the latter may constitute a new class of short-acting neuroleptics. 54 references. (Author abstract modified)

003438 Gorman, Judith E.; Dyak, James D.; Reid, Larry D. Rensselaer Polytechnic Institute, Troy, NY 12181 **Methods of deconditioning persisting avoidance: diazepam as an adjunct to response prevention.** Bulletin of the Psychonomic Society. 14(1):46-48, 1979.

Persisting avoidance was studied, and the effect of diazepam on persisting avoidance was examined. Rats were trained to avoid footshock during three daily sessions, 100 trials/session, in an automated one-way avoidance chamber. Subsequent to training, footshock was terminated and the rats' persistence in responding was tabulated. Between training and the test of persisting avoidance, three groups of rats received a response prevention (RP) treatment and one group received no RP. RP consisted of forcing the rats to stay on the once dangerous grid for 5 min once a day for 4 days. Two groups received RP under the influence diazepam (25 or 50mg/kg, p.o). With respect to persisting avoidance, groups ordered themselves from most to least as: 1) placebo with no RP, 2) high dose of diazepam with RP, 3) low dose of diazepam with RP, and 4) placebo with RP. Because RP with placebo was the most effective treatment, it is concluded that diazepam is inefficient as an adjunctive treatment for overcoming persisting anxiety/fear/avoidance. 11 references. (Author abstract modified)

003439 Gouvier, William Drew; Yehle, Arthur L. Memphis State University, Memphis, TN 38152 **Delta9-tetrahydrocannabinol induced response suppression in pigeons.** Bulletin of the Psychonomic Society. 13(4):261-262, 1979.

Response suppression following acute injections of delta9-tetrahydrocannabinol (9THC) was compared between groups of White King or Silver King pigeons. Daily keypeck training continued until subjects' responses were stable for 3 days. The day following criterion performance, each Ss was injected with .250mg/kg 9THC, .125mg/kg 9THC, or the drug vehicle alone. Responses emitted during the ensuing session were cast into a ratio with the preceding criterion baseline to provide a proportion of responses suppression attributable to 9THC. Daily training continued after testing through a 12 day washout period, after which Ss were reeligible to attain criterion performance and be retested. All Ss were tested in each condition, with random assignment of injection sequences to Ss. Analysis of the results indicate that higher doses of 9THC increased response suppression among both groups. This effect was more pronounced among Silver King pigeons, who as a group, differed significantly from the White Kings. 6 references. (Author abstract)

003440 Grilly, David M.; Genovese, Raymond F. Department of Psychology, Cleveland State University, Cleveland, OH 44115 **Assessment of shock discrimination in rats with signal detection theory.** Perception & Psychophysics. 25(6):466-472, 1979.

Nociception in six rats was evaluated with signal detection theory (TSD) techniques using a modified yes-no paradigm. A .1sec, .075 mA shock was the discriminative stimulus for a choice to one side of a T-maze, and a .1sec, .25 mA shock (capable of reliably eliciting a flinch) was the discriminative stimulus for the opposite choice. Response bias was manipulated through differential reinforcement for the two choices, and signal sensitivity was manipulated by varying the intensity of the higher intensity shock signal. Individual detection ROCs appeared linear with slopes of one when plotted on double probability scales. Indices of signal sensitivty and response bias were independent, as predicted by TSD. Morphine sulfate (4 mg/kg) significantly reduced d' but did not affect beta, suggesting that, if appropriate parameters are used, TSD analyses may have value in assessing nociception in rats. 20 references. (Author abstract)

003441 Harris, R. Adron; Case, Jeffrey. Department of Pharmacology, University of Missouri School of Medicine, Columbia, MO 65212 **Effects of maternal consumption of ethanol, barbital, or chlordiazepoxide on the behavior of the offspring.** Behavioral and Neural Biology. 26(2):234-247, 1979.

The effects of chronic maternal ingestion of ethanol, barbital, or chlordiazepoxide (CDP) by female rats during gestation and nursing upon the growth, behavior, and drug sensitivity of the offspring were investigated. Female rats received barbital or CDP in their drinking water or ethanol in a liquid diet with drug administration beginning before breeding and continuing until the offspring were weaned. Control groups received a normal drug free diet. Both birth weight and weight at 1 week were reduced by barbital and ethanol, but not by CDP exposure. Barbital offspring trained to avoid footshock subsequently displayed longer avoidance latencies than controls only during the training session. When trained to respond for food presentation under a fixed-ratio 20 schedule, the response rates of the barbital and CDP groups were less than those of the untreated control group; while the response rates of both the ethanol and

sucrose control groups were greater than those of the untreated control group. When injected with ethanol or phenobaribital, the duration of narcosis was less for the offspring of the CDP treated and barbital treated mothers than for the untreated controls. Ethanol and sucrose offspring were not different in this regard. It is concluded that future experiments with cross-fostering techniques are required to better define the critical period for the behavioral teratology produced by these drugs. 23 references. (Author abstract modified)

003442 Hetu, Claude; Joly, Jean-Gil. Hopital Saint-Luc, 1058 Saint-Denis, Montreal, Quebec H2X 3J4, Canada **Effects of chronic ethanol administration in the rat: relative dependency on dietary lipids -- III. In vivo tolerance to hexobarbital.** Biochemical Pharmacology (Oxford). 28(6):841-847, 1979.

The effects of chronic ethanol administration and dietary lipids on hexobarbital metabolism in vivo were investigated in rats. Chronic administration of ethanol with either a high fat or low fat diet reduces similarly the hexobarbital sleeping times in the rat. Ethanol decreased the plasma and total body half-lives of hexobarbital in both dietary models, but they were decreased significantly more with the high fat diet. A good correlation between hexobarbital plasma half-life and sleeping time was found only with the high fat dietary model; sleeping time was not a good index of hexobarbital metabolism in the low fat mode. Ethanol fed rats awaken with significantly higher hexobarbital concentrations in brain and other tissues; this phenomenon is significantly more important in the high fat model. Ethanol, administered chronically in nutritionally adequate liquid diets, increases tolerance to hexobarbital by increasing drug disposition and by decreasing central nervous system sensitivity. Both factors in tolerance are altered by modifications of the dietary lipid intake. 32 references. (Author abstract modified)

003443 Hoffman, Paula L.; Ritzmann, Ronald F.; Walter, Roderich; Tabakoff, Boris. Department of Physiology and Biophysics, University of Illinois at the Medical Center, Chicago, IL 60612 **Arginine vasopressin maintains ethanol tolerance.** Nature (London). 276(5688):614-616, 1978.

Evidence is presented that treatment of animals with the neurohypophyseal hormone (arg 8)vasopressin (AVP) during and after chronic ethanol administration leads to long-term maintenance of tolerance to the hypothermic and sedative effects of ethanol. Research with male C57BL/6 mice indicates that functional (CNS) tolerance to ethanol is affected by the hormone. The findings support the view that development of functional tolerance to drug effects involves an adaptive mechanism in the CNS similar to that which occurs during learning and/or memory consolidation. 24 references.

003444 Holtzman, Stephen G. Department of Pharmacology, Emory University School of Medicine, Atlanta, GA 30322 **Discriminative stimulus properties of levo-alpha-acetylmethadol and its metabolites.** Pharmacology Biochemistry and Behavior. 10(4):565-568, 1979.

The discriminative stimulus properties of levo-alpha-acetylmethadol (LAAM), its metabolites levo-alpha-acetyl-N-normethadol (NorLAAM) and levo-alpha-acetyl-N,N-dinormethadol (DiNorLAAM), and methadone were evaluated in male Sprague-Dawley rats trained to discriminate between saline and morphine in a two choice discrete trial avoidance paradigm. All four compounds produced dose related increases in the number of trials completed on the morphine appropriate choice leveler after subcutaneous or oral administration. LAAM and DiNorLAAM had a slow onset and long duration of action, with an oral:parenteral potency ratio of 1:3. NorLAAM had more rapid onset and shorter duration of action, with an oral:parenteral potency ratio of 1:10. Results suggest that the pharmacological activity of LAAM is dependent on conversion of LAAM to an active metabolite, probably NorLAAM. 22 references. (Author abstract modified)

003445 Hruska, Robert E.; Silbergeld, Ellen K. Building 36, Room 5A31, NIH, 9000 Rockville Pike, Bethesda, MD 20205 **Abnormal locomotion in rats after bilateral intrastriatal injection of kani kainic acid.** Life Sciences (Oxford). 25(2):181-193, 1979.

Locomotion patterns were examined in male Sprague-Dawley rats given bilateral, intrastriatal injections of kainic acid (KA). Locomotion in these animals was characterized by increased swing time and decreased stance time, which may be analogous to the locomotion pattern in patients with Huntington's disease. These findings suggest that rats with bilteral KA lesions of the striatum may serve as a useful animal model for the study and treatment of Huntington's disease and related disorders. 24 references. (Author abstract modified)

003446 Hwang, E. Chung; Van Woert, M. H. Department of Neurology, Mount Sinai School of Medicine, Fifth Avenue and 100th Street, New York, NY 10029 **p,p'-DDT-induced myoclonus: serotonin and alpha-noradrenergic interaction.** Research Communications in Chemical Pathology and Pharmacology. 23(2):257-266, 1979.

Oral administration of 600mg/kg 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (p,p'-DDT) produced myoclonic activity in male Swiss-Webster mice, which was reduced by L-5-hydroxytryptophan (L-5HTP, 200mg/kg ip), 3-hydroxy-4-methyl-alpha-methyl-phenethylamine (24mg/kg ip), serotonin uptake blockers, or the alpha-receptor blockers phenoxybenzamine (5mg/kg ip) and trazodone (tmg/kg ip). Pretreatment with 400mg/kg ip p-chlorophenalanine decreased endogenous brain serotonin and blocked the antimyoclonic actions of all these drugs except L-5HTP. Seven other alpha-receptor blockers (phentolamine, tolazoline, yohimbine, azapetine, aceperone, nicergoline, and prazoxin) potentiated the antimyoclonic activity of a small dose of L-5HTP (50mg/kg). It is suggested that an alpha-noradrenergic inhibitory synapse may be located in the neural circuit connecting a serotonergic neuron to the final motor responses (p,p'-DDT-induced myoclous). 14 references. (Author abstract modified)

003447 Hwang, Eunyong Chung; Van Woert, Melvin H. Dept. of Neurology, Mount Sinai School of Medicine, New York, NY 10029 **Behavioral and biochemical effects of p-methoxyphenylethylamine.** Research Communications in Chemical Pathology and Pharmacology. 23(3):419-431, 1979.

A metabolite of p-chlorophenylalanine, p-methoxyphenylethylamine (p-MPEA), induced the serotonin syndrome (lateral head weaving, Straub tail, hindlimb abduction, tremor, hyperactivity, reciprocal forepaw treading, salivation, and piloerection) in male Swiss-Webster mice. The p-MPEA-induced behavioral signs were partially prevented by pretreatment with serotonin (5HT) uptake blockers and 5HT receptor blockers, but not by depletors of brain 5HT. P-MPEA also selectively released 5HT and inhibited 5HT uptake from mouse whole brain synaptosomes. The concentrations of 5HT and 5-hydroxyindoleacetic acid in whole mouse brain were increased 1 and 2 hours after injectin of 50mg/kg p-MPEA. The effect of p-MPEA on displacement of specific tritiated 5HT binding to membranes from mouse brain was considerably less than that of p-chlorophenylethylamine, p-methoxytryptamine, and quipazine. Results suggest that p-MPEA may induce the serotonin syndrome predominantly by releasing 5HT from presynaptic nerve terminals. 25 references. (Author abstract modified)

003448 Hynes, Martin D.; Berkowitz, Barry A. Berkowitz: Roche Institute of Molecular Biology, Nutley, NJ 07110 **Nitrous oxide stimulation of locomotor activity: evidence for an opiate-like behavioral effect.** Journal of Pharmacology and Experimental Therapeutics 209(2):304-308, 1979.

Nitrous oxide and morphine sulfate both produced a concentration related increase in the locomotor activity of male CD-1 mice. The ability of nitrous oxide to stimulate locomotor activity was reduced by naloxone, naltrexone, and morphine tolerance. Naloxone caused a dose dependent decrease in locomotor activity when administered immediately before mice were placed in a novel environment but had no effect when the mice were allowed to acclimate for 1 hour prior to injection. In acclimatized mice, naloxone was still able to decrease the stimulation of locomotor activity induced by nitrous oxide. High doses of naloxone and naltrexone completely abolished the effects of morphine, but only partially reduced the effects of nitrous oxide. Results indicate that part, but not all, of the pharmacological effects of nitrous oxide are mediated through opiate-like mechanisms. 18 references. (Author abstract modified)

003449 James, Thomas A.; Starr, Michael S. Dept. of Pharmacology, School of Pharmacy, 29/39 Brunswick Square, London WC1N 1AX, England **Effects of substance-P injected into the substantia nigra.** British Journal of Pharmacology (London). 65(3):423-429, 1979.

The behavioral and biochemical effects of microinjections of 1-10mcg substance-P (SP) into discrete areas of the basal ganglia of male Wistar rats were examined. SP injected unilaterally into the zona reticulata of the substantia nigra elicited dose dependent contraversive circling and an increase in dopamine turnover in the ipsilateral striatum. SP applied to the zona compacta, zona lateralis, or medial lemniscus evoked ipsiversive turning, with a fall in dopamine turnover and a rise in 5-hydroxytryptamine (5-HT) turnover in the corresponding striatum. Unilateral injections of SP in the crus cerebri, zona incerta, caudate nucleus, putamen, or globus pallidus had no effect on behavior. In rats pretreated with apomorphine or amphetamine, SP induced contraversive circling, followed by locomotion in the opposite direction. Turning responses to a second dose of SP were diminished at 3 hours and reproducible 24 hours after the first injection. Bacitracin (50ng) injected into the zona reticulata caused ipsiversive turning. Larger (10ng) intranigral doses of bacitracin evoked barrel rotation, as did intracisternal SP (10mcG). No changes in free concentrations of aspartate, glutamate, gamma-aminobutyric acid, glycine, or alanine were detected in any brain region following intracisternal injection of 10mcG SP, but glutamine levels were elevated throughout the brain 30-60 minutes later. 22 references. (Author abstract modified)

003450 Janicki, Piotr; Libich, Jerzy. Department of Pharmacology, Institute of Physiological Sciences, Medical Academy of Warsaw, 00-927 Warsaw, Poland **Detection of antagonist activity for narcotic analgesics in mouse hot-plate test.** Pharmacology Biochemistry and Behavior. 10(4):623-626, 1979.

The effects of morphine, pentazocine, nalorphine, and naloxone on the latency to paw licking and jumping off the hot plate test were compared in male Swiss mice. Morphine (0.025, 0.05, and 0.1mmole/kg i.p.)significantly increased paw lick and jump off latency. The mixed agonist/antagonist pentazocine (0.048, 0.096, and 0.192mmole/kg) and nalorphine (0.032, 0.064, and 0.128mmole/kg) significantly increased the latency to paw licking but did not significantly change the jump off latency. Naloxone (0.016mmole/kg) significantly decreased jump off latency, but had no effect on paw lick latency. Results suggest that agonist properties are involved in the paw lick response and that antagonistic properties determine jumping off behavior. 25 references. (Author abstract modified)

003451 Jarbe, T. U. C.; Loman, P.; Swedberg, M. D. B. University of Uppsala, Department of Psychology, P.O. Box 227, S-751 Uppsala, Sweden **Evidence supporting lack of discriminative stimulus properties of a combination of naltrexone and morphine.** Pharmacology Biochemistry and Behavior. 10(4):493-497, 1979.

Three groups of Mongolian gerbils were trained to discriminate the effects of 12mg/kg morphine from those of saline, naltrexone (2mg/kg) or a combination of 12mg/kg morphine and 2mg/kg naltrexone injected 60 minutes prior to the start of discriminative training in a T-maze. Rapid development of drug discriminative control of choice behavior was seen in these three groups. In contrast, animals trained to discriminate the morphine/naltrexone combination from saline or naltrexone alone from saline failed to reach criterion (8 correct first trial choices in 10 consecutive sessions) during 60 training sessions. Results indicate that the discriminative stimulus properties of certain combinations of morphine and naltrexone are weak and not easily discriminable from those of saline. 33 references. (Author abstract modified)

003452 Jouhaneau-Bowers, Muriel; Le Magnen, Jacques. Lab. de Neurophysiologie Sensorielle et Comportementale, College de France, 11 Place Marcelin Berthelot, F-75231 Paris Cedex 05, France **ACTH self-administration in rats.** Pharmacology Biochemistry and Ebhavior. 10(3):325-328, 1979.

The ability of male Wistar rats to learn a lever-pressing response reinforced by contingent intravenous delivery of the adrenocorticotrophic hormone (ACTH) analogues ACTH1-24 and ACTH4-10 was investigated. About 60% of the rats learned to press the lever for the two analogues, which were infused at a rate of 2.08 mcg/second via a chronically implanted intrajugular catheter. Most of the animals exhibited sustained daily self-injections of 250 to 375mcg ACTH1-24 and more variable amounts of ACTH4-10. The self-administration of the ACTH4-10 analogue, which does not stimulate adrenocortical hormone release, indicates that the positive reinforcing effect of ACTH is not due to its adrenal stimulating activity. Brain targets possibly involved in the self-administration of ACTH are discussed. 22 references. (Author abstract modified)

003453 Kaesermann, H. P.; Lambelet, J.; Peters, G. Institut de Pharmacologie de l'Universite, 21 Rue de Bugnon, CH-1011 Lausanne, Switzerland **The effect of beta-1 and beta-2 agonists (and antagonists) on drinking behavior in rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R60, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of subcutaneous injections of the nonselective beta-agonist isoprenaline (ISO), the beta-1 agonist prenalterol (PREN), and the beta-2 agonists hexoprenaline (HEXO), salbutamol (SALB), and terbutaline (TERB) on drinking behavior in male rats are reported. The maximal drinking responses to ISO, HEXO, and SALB were similar; the response to TERB was slightly smaller, while PREN induced only a small drinking response. Pretreatment with the beta-1 specific antagonist atenolol slightly depressed drinking induced by ISO, HEXO, SAB, TERB, and PREN. The beta-2 specific antagonists butoxamine and 1-(p-tolyl)-2-isopropyl-amino-1-propranolol (H35/25) in general had no effect on drinking induced by nonselective or beta-2 specific agonists. However, butoxamine significantly inhibited drinking induced by SALB, and H35/25 inhibited drinking induced by ISO. Results suggest that drinking induced by beta-

agonists is mediated by receptors different from classical beta-1 or beta-2 receptors. (Author abstract modified)

003454 Kallman, Mary J.; Spencer, R. Mason; White, Alice T.; Chance, William T.; Rosecrans, John A. Dept. of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **Morphine-induced behavioral disruption in rats chronically depleted of brain dopamine.** Research Communications in Chemical Pathology and Pharmacology. 24(1):115-125, 1979.

The development of morphine tolerance was examined in adult Sprague-Dawley rats depleted of brain dopamine (DA) by treatment with 6-hydroxydopamine and desmethylimipramine (DMI) at 14 days of age. The response rates of DA depleted rats and DMI treated controls were equally suppressed by various acute doses of morphine, but the DA depleted group developed tolerance to chronic morphine treatment faster than the control group. The DA depleted rats also showed a greater suppression of response rates 24 hours after cessation of morphine treatment. 12 references. (Author abstract modified)

003455 Kennedy, Linda A.; Zigmond, Michael J. Department of Pharmacology, School of Pharmacy, University of Pittsburgh, Pittsburgh, PA 15260 **The behavioral effects of D-amphetamine are correlated with its effects on cAMP in different brain regions.** Brain Research (Amsterdam). 168(2):408-413, 1979.

The behavioral effects of d-amphetamine were correlated with its effects on cyclic adenosine 3',5'-monophosphate (cAMP) in male albino rats. Low doses of d-amphetamine (1.5and 3.0mg/kg ip) produced a marked increase in locomotor activity and a 30% increase in the cAMP content of the olfactory tubercle and frontal cortex, with no change in striatal levels of cAMP. At a higher dose (10mg/kg), the drug produced stereotyped behavior and increased cAMP concentrations in the striatum, frontal cortex, and olfactory tubercle. Both the behavioral and biochemical effects of d-amphetamine were inhibited by the dopamine receptor antagonist, fluphenazine. In light of previous studies linking limbic and striatal dopamine with locomotion and stereotypy, respectively, these findings suggest that monitoring changes in the concentration of cAMP may be a useful means of determining the conditions under which dopamine is released. 32 references.

003456 Kiianmaa, Kalervo; Andersson, Kurt; Fuxe, Kjell. Research Laboratories of the State Alcohol Monopoly, Box 350, SF-00101 Helsinki 10, Finland **On the role of ascending dopamine systems in the control of voluntary ethanol intake and ethanol intoxication.** Pharmacology Biochemistry and Behavior. 10(4):603-608, 1979.

Following recovery of feeding and drinking behaviors, the voluntary ethanol intake of male Long-Evans hooded rats with bilateral 6-hydroxydopamine (6-OHDA) lesions of ascending mesolimbic and mesostriatal dopamine systems did not differ from that of controls. The duration of ethanol-induced narcosis and the extent of ethanol-induced hypothermia were not affected by the lesions. In a tilting plane test conducted 2 months after the operation, however, ethanol impaired the performance of the 6-OHDA lesioned rats significantly less than that of controls. Results suggest that ascending dopamine neurons to the forebrain are involved in the intoxicating effect of ethanol. 41 references. (Author abstract modified)

003457 Kirby, Marilyn J.; Pleece, S. A.; Redfern, P. H. School of Pharmacy and Pharmacology, University of Bath, Claverton Down, Bath BA2 7AY, England **The effect of viloxazine hydrochloride (Vivalan) on food intake and obesity in the rat.** Journal of Pharmacy and Pharmacology (London). 30(Supplement):36P, 1978.

In a summary of a paper presented at the British Pharmaceutical Conference in Coventry, September 1978, the effects of viloxazine hydrochloride on food intake and obesity in female Wistar rats given access to a selection of foods are reported. The rats were given viloxazine or fenfluramine in the drinking water at a concentration of 0.1mg/ml (daily dose about 10mg). Viloxazine significantly reduced food intake in the initial stages of study, but this effect diminished with time; the drug produced a slight inhibition in weight gain, but the difference from nondrug controls was not significant. In contrast, the anorectic drug fenfluramine significantly decreased weight gains, compared to controls. In all groups, here was a significant correlation between bodyweight and the deposition of abdominal fat, as well as food intake. Viloxazine did not appear to change the proportions of fat, carbohydrate, and protein consumed. 1 reference. (Author abstract modified)

003458 Koella, W. P.; Glatt, A.; Klebs, K.; Durst, T. Biological Research Laboratories, CIBA-GEIGY Ltd., Basel, Switzerland **Epileptic phenomena induced in the cat by the antidepressants maprotiline, imipramine, clomipramine, and amitriptyline.** Biological Psychiatry. 14(3):485-497, 1979.

The epileptogenic properties of four tricyclic antidepressant drugs (maprotiline, imipramine, clomipramine, and amitriptyline) were investigated in locally anesthetized cats immobilized with gallamine and supplied with neocortical, hippocampal, and reticular recording electrodes. Generalized sustained discharges occurred at between 20 and 25mg/kg with all four drugs. Imipramine and amitriptyline led to a pattern of repeated short generalized seizures alternating with silent periods. Maprotiline invariably produced this later alternating pattern only after a 10 to 30 min period of seminormal high amplitude pattern. Clomipramine assumed a position between maprotiline on the one hand and imipramine and amitriptyline on the other. Starting at doses of 2-4mg/kg, imipramine, clomipramine, and amitriptyline (all three being norepinephrine and serotonin uptake inhibitors) induced a high amplitude sleep pattern. Maprotiline, a norepinephrine uptake inhibitor, which is thought devoid of serotonin uptake inhibiting properties, led to high amplitude slow waves only with doses of at least 12.5to 15mg/kg. 26 references. (Author abstract modified)

003459 Kohsaka, Shinichi; Nagai, Katsuko; Tsukada, Yasuzo. Department of Physiology, Keio University, School of Medicine, Tokyo, Japan **Correlation between learning ability and monoamine content in the brain of rat and monkey.** Neurochemical Research. 3(5):656-657, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The relation of brain monoamine content to learning ability was examined in male Wistar rats and in Japanese monkeys. In rats treated with amine precursors 2 hours prior to a brightness discrimination test, the number of lever presses was normal following administration of 80 to 320mg/kg l-dopa or 20 to 50mg/kg 5-hydroxytryptophan (5-HTP) but was reduced to 50% of control after 100mg/kg 5-HTP. The correct response ratio in these animals did not differ from controls. Reserpine markedly decreased the number of lever presses. In monkeys, the mean latency of a temporal discrimination was not affected by 20mg/kg L-dopa or 50 to 100mg/kg 5-HTP. Results indicate that changes in monoamine content in the brain have no relation to the ability for discrimination learning in rats and monkeys. (Author abstract modified)

003460 Kokkinidis, Larry; Irwin, Jill; Anisman, Hymie. Department of Psychology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada **Ontogenetic variations in amphetamine-in-**

duced stimulus perseveration. Behavioral and Neural Biology. 26(2):221-233, 1979.

Ontogenetic variation in amphetamine-induced stimulus perseveration was evaluated in a spontaneous alternation task. Swiss-Webster mice 15-20 days of age exhibited chance level alternation, whereas 25-30-day-old mice exhibited alternation which exceeded chance. While scopolamine reduced alternation to chance levels, treatment with d-amphetamine produced marked perseverative behavior (i.e.,below chance level alternation). Among 15-day-old animals a lower dose of amphetamine was sufficient to elicit the perseveration. Apparatus preexposure enhanced perseveration among 25-30-day-old animals and produced minimal effects among 15-20-day-old mice. These results are discussed in terms of the involvement of cholinergic mechanisms in modifying the amphetamine-induced perseveration, as well as developmental factors which determine the perseverative response. 28 references. (Auhtor abstract)

003461 Krejci, Ivan; Kupkova, Bela; Metys, Jan; Barth, Tomislav; Jost, Karel. Research Institute for Pharmacy and Biochemistry, U Elektry 8, 19404 Prague 9-Hloubetin, Czechoslovakia **Vasopressin analogs: sedative properties and passive avoidance behavior in rats.** European Journal of Pharmacology (Amsterdam). 56(4):347-353, 1979.

The effects of vasopressin analogues on passive avoidance behavior were examined in male Wistar rats. Enhanced avoidance latencies were observed 2, 7, and 13 days after the single learning trial when deamino-carba-vasopressins (1mcg), triglycyl-8-lysine-vasopressin or its des-glycinamide derivative (1mcg), deamino-D-arginine-vasopressin (1mcg), (8-L-arginine)deamino-6-carba-vasopressin (0.1mcg), or (8-L-ornithine)deamino-6-carba-vasopressin (0.1mcg) were given shortly after the learning trial. Low doses (1-3mcg/kg) of deamino-carba-vasopressins markedly depressed exploratory behavior in an open field, and higher doses (10-30mcg/kg) induced sleeplike immobility. 22 references. (Author abstract modified)

003462 Krsiak, M. Institute of Pharmacology, Czechoslovak Academy of Sciences, Albertov 4, 128 00 Praha 2, Czechoslovakia **Effects of drugs on behaviour of aggressive mice.** British Journal of Pharmacology (London). 65(3):525-533, 1979.

The effects of intraperitoneally administered scopolamine and of orally administered chlordiazepoxide, diazepam, barbitone, chlorpromazine, imipramine, ()-amphetamine, and lysergic acid diethylamide (LSD) on aggressive male Swiss mice were examined in paired interactions with nonaggressive, untreated males. Scopolamine (0.25 and 0.75mg/kg), ()-amphetamine (0.25 and 1mg/kg), chlorpromazine (2.5mg/kg), diazepam (10mg/kg), and chlordiazepoxide (50mg/kg) reduced aggressive attacks and unrest without inhibiting walking across the cage or rearing. Imipramine lessened aggressive activities only at a dose (80mg/kg) that also decreased walking and rearing. Barbitone and LSD did not alter aggression at any dose tested. Scopolamine (0.75mg/kg) and ()-amphetamine (0.25mg/kg) increased alert postures and escapes, respectively. Diazepam and chlordiazepoxide decreased tail rattling at 1 and 5mg/kg, respectively, doses 10 times lower than those required to inhibit attacks. The other drugs inhibited tail rattling only at doses which also reduced attacks. Diazepam (5 and 10mg/kg), chlordiazepoxide (20 and 50mg/kg), barbitone (60mg/kg), and scopolamine (0.25 and 0.75mg/kg)increased sociable activities, but ()-amphetamine, chlorpromazine, imipramine, and LSD did not. 48 references. (Author abstract modified)

003463 Lapin, I. P. Psychopharmacological Laboratory, Bekhterev Psychoneurological Research Institute, Leningrad, USSR **Stimulant and convulsive effects of kynurenines injected into brain ventricles in mice.** Journal of Neural Transmission. 42:37-43, 1978.

Each of six kynurenines tested (DL-kynurenine, quinolinic, 3-hydroxyanthranilic, xanthurenic, picolinic, and nicotinic acids) injected into brain ventricles in mice in doses of 25 to 50mcg produced motor excitement and/or clonic convulsions. Anthranilic acid did not produce these effects. The strongest metabolite was quinolinic acid, which was active in a dose of 1mcg. It was also the only compound which produced motor excitement and convulsions after intraperitoneal injection. The hypothermic effect of intraventricularly injected kynurenines was roughly similar to that of intraperitoneally injected material at 100 to 1000 times higher doses. These data suggest poor penetration of kynurenines formed in the liver into the brain, and the possible involvement of these metabolites of tryptophan, particularly if they are formed inside the brain, in the mechanism of seizures. (Journal abstract modified)

003464 Latham, Colin J.; Blundell, John E. BioPsychology Laboratories, Psychology Department, University of Leeds, Leeds LS2 9JT, England **Evidence for the effect of tryptophan on the pattern of food consumption in free feeding and food deprived rats.** Life Sciences (Oxford). 24(21):1971-1978, 1979.

The effects of L-tryptophan (50mg/kg i.p.)on meal size, meal frequency, rate of eating, and satiety ratios were examined in male Lister hooded rats. Tryptophan significantly reduced 24 hour food intake and meal size in freely feeding rats. In food deprived animals, tryptophan significantly reduced the size of the meal taken after fasting and markedly extended the duration of the postmeal interval. 29 references. (Author abstract modified)

003465 Le Moal, Michel; Koob, George F.; Bloom, Floyd E. Bloom: A. V. Davis Center for Behavioral Neurobiology, Salk Institute, San Diego, CA 92112 **Endorphins and extinction: differential actions on appetitive and adversive tasks.** Life Sciences (Oxford). 24(18):1631-1636, 1979.

Alpha-endorphin (lmcg) and gamma-endorphin (lmcg) both inhibited the extinction of a runway task for water reward in water deprived, male Wistar rats following subcutaneous injection. At similar doses, these same peptides produced opposing actions on the extinction of a pole jumping avoidance task: alpha-endorphin inhibited and gamma-endorphin facilitated extinction. Results suggest that the effects of these peptides on motivated behavior may be situation dependent. 13 references. (Author abstract modified)

003466 Ljungberg, T. Department of Histology, Karolinska Institutet, S-104 01 Stockholm, Sweden **Evidence that time-related changes in apomorphine stimulation determines the behavioural response.** Neuropharmacology (Oxford). 18(4):327-334, 1979.

Apomorphine induced a high degree of locomotion in male Sprague-Dawley rats following a single subcutaneous injection into the neck. However, when apomorphine was injected repeatedly, when the absorption of the drug was prolonged by suspending it in propylene glycol, or when apomorphine was injected into the flank, less locomotion was induced and compulsive gnawing was observed. The first apomorphine injection appeared to have a priming effect that altered the animals' reaction to subsequent injections. The priming effect was seen even with doses too low to activate the animal (0.1mg/kg). This priming effect developed in less than 1 hour and disappeared in 8-24 hours after injection of 1mg/kg apomorphine. Results indicate that apomorphine has a short lasting effect causing locomotion or gnawing and a long lasting effect causing a reduction of spontaneous behavior. 31 references. (Author abstract modified)

003467 Marques, David M. Worcester Foundation for Experimental Biology, Shrewsbury, MA 01545 **Roles of the main olfactory and vomeronasal systems in the response of the female hamster to young.** Behavioral and Neural Biology. 26(3):311-329, 1979.

The roles of the main olfactory and vomeronasal systems in the response of the female golden hamster to pups were investigated. Upon first encountering hamster pups, virgin females are either maternal or cannibalistic. Radical bulbectomy, which disrupts both the main and accessory bulbs, reduced maternal behavior, pup killing, and nest building. The effects of bulbectomies were not reproduced by peripheral deafferentations (sensory loss only) of the main olfactory and vomeronasal systems. After vomeronasal nerve cuts (VNNC) most killers became carriers, and built better nests than before deafferentation. Zinc sulfate treatment (main olfactory system sensory loss) alone had little effect, but when combined with transection of the vomeronasal nerves, it converted to carriers those killers that had continued to kill after VNNC. None of these procedures affected cricket killing, and the behavior patterns during cricket killing appear to be similar to those during pup killing. The treatments that reduced pup killing appear to be stimulus rather than response related. 29 references. (Author abstract modified)

003468 Martin, John R.; Berman, Mark H.; Krewsun, Ihor; Small, Stephen F. Department of Physiology-Pharmacology, School of Pharmacy, University of the Pacific, Stockton, CA 95211 **Phencyclidine-induced stereotyped behavior and serotonergic syndrome in rat.** Life Sciences (Oxford). 24(18):1699-1703, 1979.

Phencyclidine (50mg/kg i.p.)induced a biphasic behavioral response in male Wistar rats, consisting of the serotonergic syndrome (forepaw treading, headweaving, hindlimb abduction, rigidity, Straub tail, and resting tremor) followed by stereotyped behavior (sniffing, gnawing, repetitive movement, and increased locomotion). The initial serotonergic syndrome was significantly reduced by cinanserin (20mg/kg i.p.)and cyproheptadine (2.Omg/kg i.p.), but was not influenced by haloperidol (0.5mg/kg i.p.). The subsequent stereotyped behavior was significantly reduced by haloperidol, but was not influenced by cinanserin or cyproheptadine. A lower dose of phencyclidine (5.0mg/kg i.p.)elicited only haloperidol sensitive sterotyped behavior. Results indicate that pencyclidine induces the serotonergic syndrome and stereotyped behavior through serotonergic and dopaminergic mechanisms, respectively. 16 references. (Author abstract modified)

003469 Mason, S. T.; Fibiger, H. C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, BC V6T 1W5, Canada **Kainic acid lesions of the striatum in rats mimic the spontaneous motor abnormalities of Huntington's disease.** Neuropharmacology (Oxford). 18(4):403-407, 1979.

Injection of 3nm kainic acid (dissolved in 0.5ml phospharte buffer, pH 7.2) into the dorsal striatum of male albino Woodlyn rats resulted in a twofold increase nocturnal locomotor activity but did not affect daytime activity. Pimozide reduced the nocturnal locomotor activity but did not normalize function, suggesting the neuroleptic did not act directly on the neuropathology of the lesion. These findings suggest that the striatal lesioned rat is used ani al model for the study m of Huntington's chorea. 22 references. (Author abstract modified)

003470 Mason, Stephen T.; Corcoran, Michael E. Department of Psychology, University of Victoria, P. O. Box 1700, Victoria, BC, V8W 2Y2, Canada **Depletion of brain noradrenaline, but not dopamine, by intracerebral 6-hydroxydopamine potentiates convulsions induced by electroshock.** Journal of Pharmacy and Pharmacology (London). 31(4):209-211, 1979.

The roles of noradrenaline (NA) and dopamine (DA) in the convulsions induced by electroconvulsive shock (ECS) in male Wistar rats were studied. The neurotoxin 6-hyroxydopamine was injected into the ascending NA fibers in the dorsal bundle in the mesencephalon to deplete brain NA to less than 10% of control values or into the ascending DA fibers in the nigrostriatal bundle to deplete brain dopamine DA to less than 15% of control. The NA uptake inhibitor desipramine was used to prevent the loss of NA in the latter group. A significant potentiation of the response to ECS was seen in rats depleted of NA, but not in those depleted of DA. The duration of the convulsions was significantly increased as a result of loss of forebrain NA. Results indicate that NA, but not DA, has a significant role in the convulsive response to ECS. 29 references. (Author abstract modified)

003471 Mason, Stephen T.; Corcoran, Michael E. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, BC, V6T 1W5, Canada **Catecholamines and convulsions.** Brain Research (Amsterdam). 170(3):497-507, 1979.

Seizure susceptibility was examined in male Wistar rats selectively depleted of brain noradrenaline (NA) by injection of 6-hydroxydopamine (6-OHDA) into the dorsal bundle and in rats depleted of brain dopamine (DA) by injection of 6-OHDA into the nigrostriatal bundle following pretreatment with desimipramine. Depletion of brain NA resulted in a significant potentiation of seizures induced by metrazol or by electroconvulsive shock, whereas depletion of brain DA did not alter seizure behavior. The catecholaminergic drug cocaine induced seizures in the absence of either catecholamine, suggesting that cocaine induces seizures via a nonspecific toxic mechanism. It is concluded that NA, but not DA, is involved in reducing seizure susceptibility. 39 references. (Author abstract modified)

003472 Mason, Stephen T.; Corcoran, Michael E.; Fibiger, Hans C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, B.C. V6T 1W5, Canada **Noradrenergic processes involved in the locomotor effects of ethanol.** European Journal of Pharmacology (Amsterdam). 54(4):383-387, 1979.

To determine the role of noradrenergic systems in the locomotor effects of ethanol, male Wistar rats were depleted of forebrain noradrenaline by intracerebral injection of 4mcg 6-hydroxydopamine (6-OHDA) into the noradrenaline bundles in the mesencephalon. The locomotor stimulation induced by 0.1g/kg ethanol was not altered by the 6-OHDA lesion. However, a dose of 1g/kg ethanol induced sedation in control animals and stimulation in the 6-OHDA lesioned animals. Results suggest that the locomotor effects of ethanol are mediated by at least two systems and that ethanol interacts with a noradrenergic system in producing its sedative effects. 9 references. (Author abstract modified)

003473 Matsuda, Makoto; Abe, Miyako. Department of Biochemistry, Jikei University School of Medicine, Tokyo, Japan **Gamma-aminobutyric acid content in synaptosomes of mouse brain and its relationship to convulsions.** Neurochemical Research. 3(5):678-679, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The gamma-aminobutyric acid (GABA) content and activities of GABA transaminase and glutamate decarboxylase (GAD) were estimated in brain subcellular fractions of mice given antivitamin B6 (penicillamine, hydrazine, and thiose-

micarbazide or TSC). All these substances inhibited GAD activity and reduced the concentration of GABA in the synaptosomal fraction at the onset of convulsions. Pyridoxine completely prevented the convulsions induced by these agents, as well as the decreases in GAD activity and GABA concentration in synaptosomes. The anticonvulsive action of aminooxyacetic acid (AOAA) against TSC seizures was not observed 17 hours after pretreatment with AOAA, but GABA concentration in brain was still nearly three times higher than control. (Author abstract modified)

003474 Matsui, Yoshiki; Kamioka, Toshiharu. Central Research Laboratories, Sankyo Co. Ltd., Hiromach 1-chome Shinagawaku, Tokyo 140, Japan **Potentiation of muscimol-induced hyperactivity by benzodiazepines.** Journal of Pharmacy and Pharmacology (London). 31(6):427-428, 1979.

The role of benzodiazepines in potentiating hyperactivity induced by muscimol injected into the substantia nigra was investigated. Muscimol was injected into the substantia nigra of rats and the rats' locomotor activity was observed for 60 minutes. Nitrazepam, diazepam, or chlordiazepoxide were administered 30 minutes prior to muscimol injections. Larger dosages of the benzodiazepines were found to potentiate the hyperactivity induced by muscimol. It is suggested that muscimol-induced hyperactivity may be related to anxiety and that the excitatory effect of the benzodiazepines may be due to facilitation of nigra GABAergic transmission. 17 references.

003475 McGilliard, Kip L.; Takemori, A. E. Department of Pharmacology, University of Minnesota, Minneapolis, MN 55455 **Alterations in the antagonism by naloxone of morphine-induced respiratory depression and analgesia after morphine pretreatment.** Journal of Pharmacology and Experimental Therapeutics. 207(3):884-891, 1978.

The effect of chronic or acute morphine pretreatment on naloxone antagonism of morphine-induced respiratory depression was examined in male Swiss-Webster mice. A subcutaneous injection of 20mg/kg morphine 6 hours before testing produced shift of the apparent pA2 (negative logarithm of dose of antagonist that reduces the effect of a double dose of agonist to that of a single dose) of morphine/naloxone for analgesia from 7.05 to 7.33, but did not change the apparent pA2 for respiratory depression. Subcutaneous implantation of a morphine pellet for 72 hours produced a shift in the apparent pA2 of morphine/naloxone for respiratory depression from 7.35 to 7.63 and a further shift in the apparent pA2 for analgesia to 7.58. After morphine pellet implantation, mice showed a much greater degree of tolerance to morphine-induced analgesia than to respiratory depression. Results suggest that narcotic-induced respiratory depression and analgesia are mediated by different receptor interactions. 21 references. (Author abstract modified)

003476 McGivney, W. T.; McMillan, D. E. Department of Pharmacology, University of Arkansas for Medical Sciences, Little Rock, AR 72201 **The effects of acetylmethadol on motor activity and schedule-controlled responding.** Pharmacology Biochemistry and Behavior. 10(2):261-265, 1979.

The effects of levo-alpha-acetylmethadol (LAAM) on locomotor activity and operant behavior were exmained in male Sprague-Dawley rats. LAAM increased locomotor activity when given intraperitoneally at doses of 1 or 3mg/kg, but a lomg/kg dose produced a slight decrease in motor activity over a 10 hour period. In a second group of rats trained to lever press for food pellets under a fixed-interval 90 second, fixed-ratio 10 response multiple schedule, LAAM decreased rates of responding at all doses tested. Marked decreases in rates of responding under both components of the schedule occurred when LAAM was given 3 or 6 hours before the session in doses of 3 or 10mg/kg. The rate decreasing effects of LAAM became greater as the interval between administration of the drug and initiation of the session increased. 32 references. (Author abstract modified)

003477 McIntyre, Dan C.; Saari, Matti; Pappas, Bruce A. Department of Psychology, Carleton University, Ottawa, Ontario, Canada **Potentiation of amygdala kindling in adult or infant rats by injections of 6-hydroxydopamine.** Experimental Neurology. 63(3):527-544, 1979.

In a study of the role of catecholamines in seizure suppression, male Wistar rats with bilateral amygdala electrodes were given intraventricular injections of 6-hydroxydopamine (6OH) to deplete brain dopamine (DA) and norepinephrine (NE) or 6OH in combination with subcutaneous desmethylimipramine (DMI) to deplete only DA. Subsequently, the rats were subjected to kindling procedures in which daily low intensity amygdala stimulation eventually resulted in the development of clonic motor seizures. The NE depletion, but not the DA depletion, resulted in a marked reduction in the number of stimulations required to kindle convulsions, but increased the latency to onset of convulsions; the convulsion or after discharge durations were unaffected. Control animals given only DMI showed no permanent neurochemical effects, but exhibited retarded after discharge evolution. Results indicate that central catecholamines are capable of inhibiting a variety of forms of seizure. 25 references. (Author abstract modified)

003478 McKenna, Mary L.; Ho, Beng T.; Englert, Leo F. Texas Research Institute of Mental Science, Houston, TX 77030 **Generalization of norcocaine to the discriminative stimulus properties of cocaine.** Pharmacology Biochemistry and Behavior. 10(2):273-276, 1979.

In male Sprague-Dawley rats trained to discriminate 10mg/kg cocaine from 1ml/kg saline, the N-demethylated metabolite norcocaine (2.5, 5, and 10mg/kg) produced a dose/response curve similar to that of cocaine and generalized to cocaine at the two higher doses. As with cocaine, the discriminative stimulus produced by norcocaine was partially antagonized by the dopaminergic antagonist pimozide and by the amine depletor reserpine. Benzoylecgonine, benzoylnorecgonine, and ecgonine methyl ester in doses of 10 and 20mg/kg did not generalize to cocaine. 22 references. (Author abstract modified)

003479 Meldrum, B. S.; Menini, Ch.; Stutzmann, J. M.; Naquet, R. Department of Neurology, Institute of Psychiatry, London, SE5 8AF, England **Effects of opiate-like peptides, morphine, and naloxone in the photosensitive baboon, Papio papio.** Brain Research (Amsterdam). 170(2):333-348, 1979.

The effects of intracerebroventricular (i.c.v.)or systemic injections of met-enkephalin, leu-enkephalin, beta-endorphin, D-Ala2,MePhe4,Met(05)-ol-enkephalin (FK-33.824), morphine, and naloxone were studied in Papio papio baboons, which spontaneously show photically-induced epileptic responses. Met-enkephalin and leu-enkephalin (1-10mg, i.c.v.)did not produce focal or generalized seizure discharges and did not consistently alter photically-induced myoclinic responses. Beta-endorphin (0.1-0.5mg, i.c.v.)also failed to alter these responses. FK-33.824 (0.1-0.5mg. i.c.v.)depressed respiration and slowed EEG background rhythms for 9-15 hours; this was associated with a loss of myoclonic responses to photic stimulation. These effects were reversed for 20-40 minutes following intramuscular (i.m.)injection of 1mg/kg naloxone. Similar effects were observed following i.v. administration of FK-33.824. Morphine (5-10mg, i.c.v.)tended to increase the latency to onset of generalized myoclonus during photic stimulation. Myoclonic responses

were delayed or diminished after morphine (5mg/kg i.m.). Naloxone reversed this effect. Naloxone alone (0.2-5.0mg/kg i.m.)did not significantly modify photically-induced myoclonus. 34 references. (Author abstract modified)

003480 Messing, R. B.; Jensen, R. A.; Martinez, J. L., Jr.; Spiehler, V. R.; Vasquez, B. J.; Soumireu-Mourat, B.; Liang, K. C.; McGaugh, J. L. Dept. of Psychobiology, University of California, Irvine, CA 92717 **Naloxone enhancement of memory. (Unpublished paper).** Research Report, NIMH Grant 2R01-MH-12526, 1978. 16 p.

The effects of systemically administered naloxone on retention in both inhibitory and active avoidance tasks in rats were examined to investigate the role of opioid systems in memory. Naloxone enhanced retention when systemically administered to male F344 rats after training in a one trial inhibitory avoidance task. The memory enhancing ability of naloxone appears to be opiate receptor dependent, because it was antagonized by morphine. Naloxone also improved retention of rats in an active avoidance task, indicating that the effect of naloxone is not task specific. The influence of naloxone on retention was time dependent in both tasks. Results show that the drug must be present for a considerable period beginning soon after the onset of memory consolidation in order to be effective. For inhibitory avoidance, it was necessary to administer naloxone immediately after training, and because of its short duration of action, again 30 min later. In the active avoidance task, naloxone was effective only when given both immediately before and, as in the inhibitory avoidance task, within 30 min after the eight acquisition trials. These results provide strong evidence that naloxone influences memory and suggest that endogenous opioid systems are involved in memory storage processes. 22 references. (Author abstract modified)

003481 Mogenson, G. J.; Takigawa, M.; Robertson, Ann; Wu, M. Department of Physiology and Psychology, University of Western Ontario, London, Ontario, N6A 5C1, Canada **Self-stimulation of the nucleus accumbens and ventral tegmental area of Tsai attenuated by microinjections of spiroperidol into the nucleus accumbens.** Brain Research (Amsterdam). 171(2):247-259, 1979.

The contribution of dopaminergic neurons to self-stimulation of the ventral tegmental area (VTA), nucleus accumbens (NAS), and prefrontal conrtex (PFC) was investigated in male rats. Injection of the dopamine antagonist spiroperidol into the NAS resulted in a significant reduction of self-stimulation of the ipsilateral VTA, but did not affect self-stimulation of the contralateral VTA. Injection of spiroperidol into the PFC had no effect on self-stimulation of the ipsilateral or contralateral VTA. Electrical stimulation of sites in the NAS that were positive for self-stimulation resulted in activation of dopaminergic VTA neurons. Results suggest that dopaminergic neurons contribute to self-stimulation of the NAS but not of the PFC. 28 references. (Author abstract modified)

003482 Mohrland, J. Scott; Gebhart, G. F. Department of Pharmacology, College of Medicine, University of Iowa, Iowa City, IA 52242 **Substance-P-induced analgesia in the rat.** Brain Research (Amsterdam). 171(3):556-559, 1979.

The antinociceptive efficacy of peripherally and centrally administered substance-P was assessed in male Sprague-Dawley rats, using standard hotplate and tail flick analgesiometric procedures. Following i.p. administration, substance-P produced a dose dependent increase in reaction time in the tail flick test; doses below 0.1mg/kg were without effect. However, no analgesic effect could be demonstrated in the hotplate test with i.p. doses up to 1.0mg/kg. Similar findings were obtained after administration of 1mcg substance-P into the periaqueductal gray: a significant increase in the tail flick reaction time was observed, but no analgesic effect could be detected in the hotplate test. 11 references.

003483 Myers, Brent M.; Baum, Michael J. Lab. of Neural and Endocrine Regulation, Department of Nutrition and Food Science, Massachusetts Inst. of Technology, Cambridge, MA 02139 **Facilitation by opiate antagonists of sexual performance in the male rat.** Pharmacology Biochemistry and Behavior. 10(4):615-618, 1979.

Intraperitoneal administration of increasing doses (5mg/kg or 20mg/kg) of the opiate antagonists naloxone hydrochloride and naltrexone hydrochloride to sexually experienced male Long-Evans hooded rats caused a significant reduction in the number of intromissions prior to ejaculation and in ejaculation latency. Mount and intromission latencies were significantly reduced following treatment with only the lower dose of each antagonist. Ways in which endorphins may modulate masculine sexual performance and contribute to successful fertilization of female conspecifics are suggested. 18 references. (Author abstract)

003484 Nielsen, I. Moller; Christensen, A. V.; Hyttel, J. Department of Pharmacology and Toxicology, H. Lundbeck & Co. A/S, DK-2500 Copenhagen-Valby, Denmark **Adaptational phenomena in neuroleptic treatment.** Advances in Biochemical Psychopharmacology. 19:267-274, 1978.

To determine whether the antipsychotic effect of neuroleptic drugs is due to dopamine (DA) receptor blockage or to the adaptational consequences of this blockade, methylphenidate- and apomorphine-induced compulsive gnawing was studied in mice treated chronically or acutely with the neuroleptic tetflutixol. Results indicate that the neuroleptic first induced a DA receptor blockade, accompanied by an increase in DA turnover. When the receptor blockage declined, the DA receptors showed increased sensitivity to DA agonists, resulting in decreased DA turnover. With repeated administration, the daily dose of neuroleptic became less and less effective in overcoming the effect of increased agonist sensitivity, leading to a return to normal DA synthesis levels. These findings suggest that the antipsychotic effect of neuroleptics is not necessarily related to DA receptor blockade itself, but to the resulting supersensitivity. Such supersensitivity could also be the cause of the tardive dyskinesia seen in some patients treated chronically with neuroleptics. 6 references.

003485 Noguchi, T.; Kohsaka, S.; Aoki, E.; Tsukada, Y. Department of Physiology, School of Medicine, Keio University, Tokyo, Japan **The effect of bovine growth hormone on the retarded growth in the neonatal hydrocortisone-treated rat.** Neurochemical Research. 3(5):660-661, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. Rats were given a daily subcutaneous injection of 40mg/kg hydrocortisone acetate from the day of birth until the third day of life (HC) or received 10mg/kg bovine growth hormone daily from the birth until weaning, in addition to the hydrocortisone treatment (HC-bGH group). The reduced protein synthesis in the brain of the HC group recovered in the HCbGH group, and thymidine kinase activity appeared earlier and was higher in the HCbGH group than in the HC group. The activity of 2',3'-cyclic nucleotide 3'-cyclic nucleotide 3'-phosphohydrolase in the cerebrum was lower in the HC group than in the HCbGH or control groups at 4 months of age. Learning ability in a brightness discrimination task was impaired in the HC group at 3 months of age, but not in the HCbGH or control groups. (Author abstract modified)

003486 Oishi, Ryozo; Suenaga, Noriko; Hidaka, Tadashi; Fukuda, Takeo. Department of Pharmacology, Faculty of Medicine, Kyushu University 60, Fukuoka 812, Japan **Inhibitory effect of intraspinal injection of 6-hydroxydopamine on the clonic convulsion in maximal electroshock seizure.** Brain Research (Amsterdam). 169(1):189-193, 1979.

The effects of intraspinal injection of 4, 8, or 12mcg of 6-hydroxydopamine (6-OHDA) on maximal electroshock seizure, decapitation convulsion, and brain and spinal cord norepinephrine (NE) levels were investigated in male CF-1 mice. The duration of tonic extension in maximal electroshock seizure was significantly prolonged only by the 4mcg dose, whereas both the duration and intensity of the clonic convulsion were reduced in a dose dependent manner by 6-OHDA. The 6-OHDA treatment prolonged the latency and reduced the duration and intensity of decapitation convulsions. Spinal NE content was decreased in a dose dependent fashion by 6-OHDA, but whole brain NE was not affected. Significant correlations were found between spinal NE content and the intensity and duration of decapitation convulsion and clonic convulsion in maximal electroshock seizure. Results indicate that spinal NE plays a role in the development of clonic convulsion in maximal electroshock seizure and in the appearance of the decapitation convulsion. 13 references.

003487 Okamoto, Michiko; Boisse, Norman R.; Rosenberg, Howard C.; Rosen, Robert. Department of Pharmacology, Cornell University Medical College, 1300 York Avenue, New York, NY 10021 **Characteristics of functional tolerance during barbiturate physical dependency production.** Journal of Pharmacology and Experimental Therapeutics. 207(3):906-915, 1978.

Functional barbiturate tolerance was examined in cats on two different chronic dosing levels: maximally tolerable pentobarbital dosing which produced deep anesthesia, or low dose barbital which markedly impaired voluntary motor function. Each treatment was applied twice daily for 5 weeks, and pentobarbital blood concentration was plotted against neurological depression on the first and last day of chronic treatment. Results indicate that the magnitude of functional tolerance is greatest for functions that are more sensitively and persistently depressed; no tolerance was observed for functions that were not obviously affected during chronic treatment. Thus, functional tolerance does not develop uniformly for all levels of neuronal function, and the magnitude of the challenge to neuronal function is an important determinant for chronic functional tolerance development to barbiturates. 21 references. (Author abstract modified)

003488 Overton, Donald A. Eastern Pennsylvania Psychiatric Institute, Philadelphia, PA 19129 **Preclinical measurement of the amount of state-dependent learning produced by psychoactive drugs.** Psychopharmacology Bulletin. 15(2):51-52, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the preclinical measurement of the amount of state dependent learning produced by psychoactive drugs is described. Rats were trained to escape from unavoidable shock in a T-maze during a series of daily 10 trial training sessions. During consecutive daily training sessions, the drug and the no drug conditions were alternated, as was the required direction of turn in the maze. It is concluded that depressants and benzodiazepines are the only commonly used psychotropic agents that are predicted to produce state dependent learning amnesias. 4 references.

003489 Pavlik, Alfred; Jelinek, Richard. Institute of Physiology, Czechoslovak Academy of Sciences, Prague, Czechoslovakia **Effect of cycloheximide administered to rats in early postnatal life: correlation of brain changes with behaviour in adulthood.** Brain Research (Amsterdam). 167(1):200-205, 1979.

Inhibition of protein synthesis during the brain growth spurt period brought about permanent structural and behavioral changes in male hooded Druckray rats was examined. A single injection of 0.6mg/mg cycloheximide (CHX) to 7-day-old rats transiently retarded body growth, caused a dose dependent inhibition of the incorporation of labeled leucine into brain protein, and depressed the growth curves for the cerebrum, cerebellum, and olfactory bulbs. The CHX treated rats were hyperactive when tested in open field apparatus at 3 or 10 months of age. A deficit in the conditioned avoidance performance of the CHX treated rats was correlated with atrophy of the olfactory bulbs. 13 references.

003490 Payne, A. P. Department of Anatomy, Glasgow University, Glasgow G12 8QQ, England **Neonatal androgen administration and sexual behaviour: behavioural responses and hormonal responsiveness of female golden hamsters.** Animal Behaviour (London). 27(Part 1):242-250, 1979.

Experiments were performed to elucidate the relationship between defeminization and masculinization of sexual behavior in the female golden hamster following neonatal androgen administration, and the relationship between the effectiveness of hormones administered neonatally and those administered in adulthood. Newborn female hamsters received testosterone, testosterone propionate, or oil. Androgenized females showed male sexual behavior as adults when treated with testosterone propionate, but only those treated neonatally with testosterone propionate showed a reduction in lordosis. This suggests that masculinization and defeminization of behavior are separate phenomena. There were no inverse relationships between male and female behavior in individuals which were both masculinized and defeminized compared to controls. In the second experiment, newborn females received testosterone, androstenedione, or oil. Androgenized females showed mounting as ovariectomized adults receiving no additional hormone treatment. Masculine behavior was enhanced by androgen treatment in adulthood, particularly if the androgen corresponded to that given neonatally. It is suggested that the masculinized behavior of neonatally androgenized female hamsters is partly androgen independent and partly androgen dependent. 30 references. (Author abstract modified)

003491 Phillips, Anthony G.; McDonald, Angus C. Department of Psychology, University of British Columbia, Vancouver, BC, V6T 1W5, Canada **Conditioned aversion to brain-stimulation reward: effects of electrode placement and prior experience.** Brain Research (Amsterdam). 170(3):523-531, 1979.

A conditioned aversion to rewarding amygdaloid brain stimulation was established in male Wistar rats by injections of toxic doses of 0.15M lithium chloride (LiCl) immediately after an initial self-stimulation session. The aversion had extinguished by the third self-stimulation session, 96 hours after conditioning. This effect could not be attributed to general depressant effects of LiCl on self-stimulation, since treatment with LiCl 24 hours before the second self-stimulation session was ineffective. LiCl injections immediately after the first test session had no disruptive effects on self-stimulation in the substantia nigra, indicating that the conditioned aversion was locus specific. The novelty of brain stimulation reward was an important factor in the conditioning effect. Parallels between conditioned aversion to rewarding brain stimulation in the amygdala and conditioned taste aversions are discussed. 22 references. (Author abstract modified)

003492 Pohorecky, Larissa A.; Makowski, Elizabeth; Newman, Barbara; Rassi, Eileen. Rockefeller University, 1230 York Avenue, New York, NY 10021 **Cholinergic mediation of motor effects of ethanol in rats.** European Journal of Pharmacology (Amsterdam). 55(1):67-72, 1979.

The role of cholinergic neurons in mediating the motor depressant effects of ethanol was examined in male Sprague-Dawley rats. Pretreatment with choline chloride (30-90mg/kg i.p.)or physostigmine (0.2mg/kg i.p.)potentiated the hypomotility produced by 2g/kg ethanol. Conversely, pretreatment with scopolamine (0.25 and 0.5mg/kg) attenuated the depressant effect of ethanol. The potentiation produced by choline was not associated with changes in levels of ethanol in the blood. It is concluded that cholinergic neurons are involved in the motor activity changes produced by ethanol and that this mechanism may operate in conjunction with the dopaminergic neuronal system. 27 references. (Author abstract modified)

003493 Poletayev, A. B.; Nadezhdin, D. S.; Naumova, T. S.; Dergachev, V. V. Moskovskiy meditsinskiy stomatologicheskiy institut, Moscow, USSR /**The influence of antiglial and antineuronal immunoglobulins on short-term and long-term memory in rats.**/ Vliyaniye antiglial'nykh i antineyronal'nykh immunoglobulinov na kratkovremennuyu i dolgovremennuyu pamyat' u krys. Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova. 28(6):1311-1313, 1978.

The effects of immunoglobulins on long-term and short-term memory were studied in rats. One group was given antineuronal, and a second group, antiglial immunoglobulins, while the other groups were given nonimmunologic substances or no substance. In these situations, the rats were conditioned to drink from only one type of bowl. The rats which had been given the two types of globulins experienced more difficulty in remembering the correct type of bowl. This indicated a roughly equivalent effect of the two types of globulins on short-term memory. The antiglial globulins were found to have a more deleterious effect on the rats' longer-term memories than the antineuronal ones. 7 references.

003494 Portig, J.; Vohland, H. W. Institut fur Toxikologie und Pharmakologie der Philipps-Universitat, Pilgrimstein 2, D-355 Marburg, Germany **A descriptive reassessment of cerebral actions of lindane. 2. The post-excitatory state.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R69, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of lindane (L) and isomers of hexachlorocyclohexane (HCH) on pentetrazol (PTZ)-induced convulsions in rats are reported. Twenty-four hours after i.p. application, the alpha-isomer of HCH acted as an anticonvulsant, but L did not. PTZ antagonism by L was restricted to a dose dependent inhibition of the clonic form of excitation (CE), with the tonic form being largely unaffected. The inhibition by L of PTZ-induced CE remained evident for 2 weeks after a single convulsive dose of L, was unrelated to the brain content of L, and did not appear to be the result of an L-metabolite acting in the brain. 1 reference. (Author abstract modified)

003495 Pradhan, S. N.; Battacharyya, Alok K.; Pradhan, Sikta. Dept., of Pharmacology, College of Medicine, Howard University, Washington, DC 20059 **Serotoninergic manipulation of the behavioral effects of cocaine in rats.** Communications in Psychopharmacology. 2(6):481-486, 1978.

The effect of pretreatment with 5-hydroxytryptophan (5HTP, 50 or 115mg/kg) and a peripheral decarboxylase inhibitor (R04-4602, 50mg/kg) on cocaine-induced behavioral changes in male Wistar derived rats were examined. Injection of 5-HTP caused an increase in the levels of 5-hydroxytryptamine (5-HT) in the diencephalon/midbrain (DM) and pons/medulla and a decrease in dopamine levels in the caudate nucleus and DM. The 5-HTP pretreatment also reduced the behavioral effects of cocaine. Results indicate that 5-HT neurons are involved in the effects of cocaine. 15 references. (Author abstract modified)

003496 Radulovacki, Miodrag; Wojcik, Walter J.; Fornal, Casimir. Department of Pharmacology, College of Medicine, University of Illinois at the Medical Center, Chicago, Il 60612 **Effects of bromocriptine and alpha-flupenthixol on sleep in REM deprived sleep deprived rats.** Life Sciences (Oxford). 24(18):1705-1712, 1979.

The effect of selective stimulation of brain dopamine (DA) receptors on rapid eye movement sleep (REM) were investigated in male Sprague-Dawley rats. In rats drprived of REM sleep for 24 hours, the DA agonist bromocriptine mesylate (5mg/kg i.p.)produced a significant increase in wakefulness and a significant reduction in REM sleep during the first 5 hours of EEG recording. These effects were completely abolished by pretreatment with the DA receptor blocker alpha-flupenthixol (0.2mg/kg i.p.). The loss of REM sleep was not regained during the next 25 hours of EEG recordinging. Thus, the stimulation of DA receptors reduced REM sleep without causing subsequent REM rebound. These findings suggest that DA stimulants may be useful in the treatment of sleep disorders characterized by excessive REM, such as narcolepsy. 36 references. (Author abstract modified)

003497 Ramabadran, K.; Jacob, J. J. C. Department of Pharmacology and Toxicology, Institut Pasteur 28, rue du Dr. Roux, F-75724 Paris Cedex 15, France **Stereospecific effects of opiate antagonists on superficial and deep nociception and on motor activity suggest involvement of endorphins on different opioid receptors.** Life Sciences (Oxford). 24(21):1959-1969, 1979.

In male Swiss mice and male Sprague-Dawley rats, the writhing responses to deep nociceptive stimuli (i.p. acetic acid) were enhanced stereospecifically by (-)-naloxone, (-)-5,9-alpha-diethyl-2)-(3-furylmethyl)-2'-hydroxy-6,7-benzomorphan (Mr-2266), and (-)-beta-2-propargyl-5-phenyl-9-methyl-2'-hydroxy-6, 7-benzomorphan (GPA-2163). Other antagonists, including naltrexone, levellorphan, diprenorphine, and (-)WIN-44441, were inactive in this test. The motor reaction of mice to a novel environment was stereospecifically depressed by some opioid antagonists including (-)Win-4441. Mr-2266 and GPA-2163 were ineffective in the motor test and hyperalgesic in the superficial and deep antinociceptive tests. These findings suggest that endorphins are involved in antinociception and motility at the level of kappa and mu receptors. 65 references. (Author abstract modified)

003498 Rodgers, R. J. Postgraduate School of Psychology, University of Bradford, Bradford, England **Alterations in shock-induced fighting and locomotor activity following intracerebroventricular injection of hydrocortisone in the rat.** Aggressive Behavior. 5(1):31-40, 1979.

The facilitatory influence of hydrocortisone on shock-induced fighting in rats was investigated in three experiments. Results of the first experiment indicate a biphasic, dose dependent action for intraventricularly administered hydrocortisone. Low and intermediate doses both facilitate fighting while the high dose exerts a potent suppressant effect. Two control tests were performed to determine whether alterations in pain reactivity or locomotor activity had accounted for observed changes in fighting behavior. None of the treatments alter shock thresholds, thereby eliminating the possibility that the effect on fighting is indirectly mediated via changes in pain reactivity. Although nei-

ther low nor intermediate doses of steroid alter behavior in activity measures, the high dose preferentially decreases vertical activity. 23 references. (Author abstract modified)

003499 Rodriguez-Sierra, J. F.; Davis, G. A. Department of Anatomy, University of Nebraska Medical Center, Omaha, NB 68105 **Tolerance to the lordosis-facilitating effects of progesterone or methysergide.** Neuropharmacology (Oxford). 18(4):335-339, 1979.

Administration of the serotonergic antagonist methysergide (MS) or of progesterone (P4) to female Sprague-Dawley rats resulted in an initial facilitation of lordosis, followed by an inhibitory or tolerant phase. Animals tolerant to P4 responded normally to MS, but animals tolerant to MS failed to responf to P4 under some conditions. The tolerance to MS did not appear to be due to serotonin receptor supersensitivity. Results suggest that P4 exerts its effects on sexual behavior by acting on other neural systems in addition to the serotonergic system. 12 references. (Author abstract modified)

003500 Rommelspacher, H.; Honecker, H.; Meinke, B. Institut fur Neuropsychopharmakologie der Freien Universitat, D-1000 Berlin 19, Ulmenallee 30, Germany **Biochemical and pharmacological studies with 6-hydroxytetrahydronorharmane (6-OH-tetrahydro-beta-carboline), a physiologically occurring metabolite of 5-hydroxytryptamine.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R65, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, evidence that 6-hydroxytetrahydronoharmane (6-OH-THN), the condensation product between 5-hydroxytryptamine and formaldehyde, is formed in vivo and is behaviorally active is presented. The compound was identified in human urine by mass spectrometry after loading with L-5-hydroxytryptophan; formation of the condensation product during the collection period was ruled out. In mice, intracisternally injected 6-OH-THN led to pronounced catalepsy and significantly prolonged reaction times in the hot plate test, decreased body temperature, and reduced motility. 1 reference. (Author abstract modified)

003501 Rosenkranz, Roberto P.; Killam, Keith F., Jr. Department of Pharmacology, School of Medicine, University of California, Davis, CA 95616 **Effects of intracerebroventricular administration of prostaglandins E1 and E2 on chemically-induced convulsions in mice.** Journal of Pharmacology and Experimental Therapeutics 209(2):231-237, 1979.

Intracerebroventricular administration of prostaglandins E1 and E2 (PGE1 and PGE2) in male Swiss-Webster ICR mice reduced the incidence of convulsions induced by pentylenetetrazole (PTZ), picrotoxin (PTX), strychnine (STR), and isoniazid (INZ) in a dose dependent manner. PGE1 and PGE2 also caused dose related increases in the time of onset of convulsions and a dose related decrease in the incidence of deaths induced by PTZ, PTX, STR, and or INZ. Results indicate that the PGEs have potent anticonvulsant, dose dependent effects in chemical convulsant models. 26 references. (Author abstract modified)

003502 Rusterholz, D. B.; Long, J. P.; Nichols, D. E. Department of Pharmacology, College of Medicine, University of Iowa, Iowa City, IA 52242 **Effect of alpha-methyltryptamine on spontaneous activity in mice.** Pharmacology Biochemistry and Behavior. 10(2):223-227, 1979.

A 10mg/kg i.p. dose of alpha-methyltryptamine (AMT) induced a significant and long-lasting increase in spontaneous activity in male Swiss-Webster mice. Pretreatment with pimozide or alpha-methyl-p-tyrosine methyl ester hydrochloride prevented the activity increase induced by AMT. Methysergide and p-chlorophenylalanine also antagonized the development of hyperactivity following AMT. Results suggest that endogenous dopamine and serotonin may both participate in the hyperactivity induced by AMT. 29 references. (Author abstract modified)

003503 Sanger, D. J.; Corfield-Sumner, P. I. Department of Psychology, University College, P.O. Box 78, Cardiff, CF1 1XL, Wales **Schedule-induced drinking and thirst: a pharmacological analysis.** Pharmacology Biochemistry and Behavior. 10(4):471-474, 1979.

The effects of d-amphetamine (0.25, 0.5, 1.0, and 2.0mg/kg i.p.)and chlordiazepoxide (2.5, 5.0, 10, and 20mg/kg i.p.)on drinking induced in female hooded rats by prior fluid deprivation or by a schedule of food pellet delivery were examined. D-amphetamine attenuated the effects of both procedures on drinking. Drinking induced by deprivation was facilitated by all doses of chlordiazepoxide, but schedule-induced drinking was decreased by the higher doses of the drug. These findings emphasize the difficulties involving in using the concept of thirst in explanations of behavior and drug action. 24 references. (Author abstract modified)

003504 Satake, Nobuhiro; Morton, Bruce E. Department of Biochemistry and Biophysics, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI 96822 **Scotophobin A causes dark avoidance in goldfish by elevating pineal N-acetylserotonin.** Pharmacology Biochemistry and Behavior. 10(4):449-456, 1979.

The decrease in dark avoidance induced in goldfish by norepinephrine was blocked by scotophobin-A or pinealectomy. Increased dark avoidance was produced by either propranolol or scotophobin alone. Serotonin, N-acetylserotonin, and the hydroxyindole-O-methyl-transferase (HIOMT) product inhibitor S-adenylsyl-homocysteine also increased dark avoidance, whereas melatonin and S-adenosyl-methionine were without effect. Pinealectomy prevented the dark avoidance increase caused by serotonin or N-acetylserotonin. Scotophobin reduced pineal melatonin, blocked the melatonin increasing effect of N-acetylserotonin, and inhibited purified bovine HIOMT. Taken together, these findings indicate that scotophobin increased dark avoidance behavior by inhibiting HIOMT, producing a buildup of N-acetylserotonin in the pineal. 20 references. (Author abstract modified)

003505 Sato, Mitsumoto; Hikasa, Naotomo; Otsuki, Saburo. Department of Neuropsychiatry, School of Medicine, Okayama University, Okayama, Japan **Experimental epilepsy, psychosis, and dopamine receptor sensitivity.** Biological Psychiatry. 14(3):537-540, 1979.

Electrical amygdaloid kindling in cats under cocaine pretreatment, haloperidol treatment, and in the drug free state was studied. Deep electrodes were implanted stereotaxically into the bilateral lateral nucleus of amygdala of 12 mature cats. All animals developed generalized convulsions following daily amygdaloid stimulation at initially subconvulsive threshold intensity. The findings suggest the primary importance of dopaminergic receptor sensitivity in inhibition of amygdaloid seizure development. 20 references.

003506 Schmaltz, Gerald. Laboratoire de Psychophysiologie, Universite de Lille I, BP 36, 59650 Villeneuve d'Ascq, France **Can halothane anaesthesia have any aversive effects on the rat?** Physiology & Behavior. 22(1):25-29, 1979.

The aversive effects of halothane were examined in male Sprague-Dawley rats pretreated with 0, 3, or 10 uncontrollable preshocks (PS) prior to anesthesia with halothane or sham anes-

thesia. The following day, all rats were given active avoidance conditioning in a Y maze. The overall escape performance of rats given 3 PS prior to halothane did not differ from that of nonshocked halothane treated rats. However, the performance of rats treated with halothane and given 0 or 3 PS was inferior to that of rats given 0 or 3 PS and sham anesthesia. The performance of rats given 10 PS prior to halothane anesthesia was markedly impaired, but did not differ significantly from that of rats given 10 PS prior to sham anesthesia. Results suggest that halothane has no amnesic effects, but may have aversive effects that interact with previous PS effects. 13 references. (Author abstract modified)

003507 Schneider, Bernard F.; Norton, Stata. Department of Pharmacology, University of Kansas Medical Center, College of Health Sciences and Hospital, Kansas City, KS 66103 **Circadian and sex differences in hyperactivity produced by amphetamine in rats.** Physiology & Behavior. 22(1):47-51, 1979.

The hyperactivity induced by d-amphetamine hydrochloride (0.25, 0.5, and 1.0mg/kg) was studied in a residential maze in male and female Sprague-Dawley rats maintained on a 12 hour light, 12 hour dark schedule. Amphetamine was given 4 hours after onset of either the light or dark cycle, and activity was measured for the following 12 hours. Females displayed significantly greater increases over control activity than males at all doses tested, in light or dark. The greater activity of female rats could not be attributed solely to sex differences in amphetamine metabolism, but appeared to involve sex differences in the CNS. In light of previous findings that neonatal asphyxia and x-irradiation in utero produce greater hyperactivity in female than in male rats, it is suggested that female rats are more likely than males to develop hyperactive behavior. 27 references. (Author abstract modified)

003508 Schwarcz, Robert; Fuxe, Kjell; Agnati, Luigi F.; Hokfelt, Tomas; Coyle, Joseph T. Department of Histology, Karolinska Institutet, Stockholm, Sweden **Rotational behaviour in rats with unilateral striatal kainic acid lesions: a behavioural model for studies on intact dopamine receptors.** Brain Research (Amsterdam). 170(3):485-495, 1979.

Rotational behavior induced by dopaminergic drugs was compared in male Sprague-Dawley rats with unilateral kainic acid lesions of the neostriatum or unilateral 6-hydroxydopamine (6-OHDA) lesions of the substantia nigra. Differences in the behavioral effects of various dopamine (DA) receptor agonists in the two groups suggest that the drugs act on supersensitive DA receptors in the 6-OHDA model and intact DA receptors in the kainic acid model. A marked decrease in the threshold dose to induce rotational behavior was observed in the 6-OHDA lesioned rats, suggesting an increased affinity of the supersensitive DA receptors to DA agonists (particularly lergotrile and bromocriptine). Peak activity in response to ergot drugs (particularly lergotrile, bromocriptine, and apomorphine) was higher in the 6-OHDA lesioned rats than in the kainic acid lesioned animals, suggesting an increase in the number of functional binding sites for the ergot drugs at the supersensitive DA receptors. A considerable increase in the slope values of logits plots was observed following denervation of DA receptors. Results suggest that the development of DA supersensitivity involves increased affinity of the receptors for DA agonists and an increase in the coupling to its biological effector mechanism. 24 references. (Author abstract modified)

003509 Scott, J. P.; Lucas, Linda A. Bowling Green State University, Bowling Green, OH 43402 **Amphetamine and hyperactivity in dogs.** Behavior Genetics. 8(6):567-568, 1978.

A summary of a paper read at the Eighth Annual Meeting of the Behavior Genetics Association, held at the University of California at Davis, June 1978, is presented. The effects of amphetamines on dog hyperactivity were investigated. An inhibitory training test requiring puppies to remain on a 1m by 1m board for 60 sec was administered to 58 puppies including 11 telomians, 16 beagles, and 31 reciprocal hybrids at 8 and 16 weeks of age. After baseline performance was determined, all puppies were tested under d-amphetamine at levels of 0.25 and 0.5mg/kg. Beagles were generally superior to telomians and showed improved performance under amphetamine. Telomians performed poorly when drugged, while hybrids showed marked improvement. Favorable effects of amphetamine were markedly enhanced when hybrids were later tested under conditions that elicited the separation syndrome. (Journal abstract modified)

003510 Seiden, L. S.; Andresen, J.; MacPhail, R. C. University of Chicago, Department of Pharmacological and Physiological Sciences, 947 East 58th Street, Chicago, IL 60637 **Methylphenidate and d-amphetamine: effects and interactions with alphamethyltyrosine and tetrabenazine on DRL performance in rats.** Pharmacology Biochemistry and Behavior. 10(4):577-584, 1979.

Methylphenidate (2.5-20.0mg/kg) and d-amphetamine (0.375-3.0mg/kg) increased the rate of responding and decreased the frequency of reinforcement in male Sprague-Dawley rats trained to press a lever for water reinforcement on a differential reinforcement of low rates (DRL) schedule. The effects of d-amphetamine and methylphenidate on DRL performance were attenuated by alpha-methyltyrosine (150mg/kg). Both drugs attenuated the response rate suppressing effects of tetrabenazine (4.0mg/kg). Results suggest that methylphenidate and d-amphetamine, at the doses tested, acted on similar catecholaminergic pools within the CNS to influence DRL performance. These findings are contrasted with previous studies of the effects of methylphenidate and amphetamine on stereotypic behavior, in which the two drugs showed dissimilar interactions with other drugs. 44 references. (Author abstract modified)

003511 Sharman, D. F. Agricultural Research Council, Institute of Animal Physiology, Babraham, Cambridge CB2 4AT, England **Brain dopamine metabolism and behavioral problems of farm animals.** Advances in Biochemical Psychopharmacology. 19:249-254, 1978.

The role of brain dopamine metabolism in stereotyped oral behaviors in farm animals is discussed. Experiments with apomorphine and metoclopramide in the pig and guinea-pig suggest that dopamine receptors in the brain may be involved in the production of abnormal oral behavior. However, more than one type or group of receptors seems to be involved, since relatively low doses of metoclopramide or haloperidol can block the response to apomorphine but not to metoclopramide. The possibility that repetitive, stereotyped behavior causes the release of dopamine in brain is considered. 21 references.

003512 Soubrie, Philippe; Thiebot, Marie-Helene; Simon, Pierre. Unite 19 de Recherches de Neuropsychopharmacologie de l'INSERM, 2, rue d'Alesia, F-75014 Paris, France **Enhanced suppressive effects of aversive events induced in rats by picrotoxin: possibility of a GABA control on behavioral inhibition.** Pharmacology Biochemistry and Behavior. 10(4):463-469, 1979.

The effects of pretreatment with the gamma-aminobutyric acid (GABA) receptor blocker picrotoxin (0.5and 1mg/kg i.p.)on the behavioral inhibition induced in male Wistar rats by novelty, punishment, or nonreward were studied. Picrotoxin enhanced inhibition of water drinking in rats placed for the first time in an unfamiliar box, inhibition of milk drinking in rats faced with milk for the second time, and inhibition of chocolate

intake in rats faced with chocolate for the third time. The drug failed to further reduce intake in rats faced with milk or chocolate for the first time and had no effect on drinking in rats habituated to the test box or familiarized with chocolate. Picotoxin enhanced the inhibition of lever-presses for food induced by delivery of an electric shock every 25 or 10 presses, but did not enhance inhibition of lever-pressing induced by the delivery of shock every five presses. Picrotoxin did not modify responding in nonpunished rats. The drug impaired recovery from reward depression induced by a shift from a continuous reinforcement to a 4 response fixed-ratio (FR4) schedule, but was ineffective in rats adapted to the FR4 schedule. Results suggest that picrotoxin increases the inhibitory control of aversive events and that GABA is critically involved in the release of behavior from mild inhibitory control exerted by novelty, punishment, or nonreward. 36 references. (Author abstract modified)

003513 Spealman, Roger D. New England Regional Primate Research Center, Southborough, MA 01772 **Behavior maintained by termination of a schedule of self-administered cocaine.** Science. 204(4398):1231-1233, 1979.

To examine the role of factors, other than the inherent properties of drugs, in determining how drugs affect behavior, squirrel monkeys self-administered cocaine by pressing a lever while under a variable interval schedule of reinforcement. At the same time, they terminated the availabilility of self-administered cocaine by pressing a second liver while under a fixed interval schedule of reinforcement. Results suggest that the maintenance of behavior by scheduled drug injections and by termination of scheduled drug injections, can occur simultaneously when behavior is controlled by different contingencies associated with a single drug. 2 references. (Author abstract modified)

003514 Spealman, Roger D. New England Regional Primate Research Center, One Pine Hill Drive, Southborough, MA 01772 **Comparison of drug effects on responding punished by pressurized air or electric shock delivery in squirrel monkeys: pentobarbital, chlordiazepoxide, d-amphetamine and cocaine.** Journal of Pharmacology and Experimental Therapeutics 209(2):309-315, 1979.

The effects of drugs were examined in squirrel monkeys in which responding was maintained by food presentation and simultaneously suppressed by pressurized air or electric shock delivery. Some doses of pentobarbital and chlordiazepoxide increased responding in the punishment component regardless of the punishing event or the level of suppression produced by those events. D-amphetamine and cocaine only decreased responding in the punishment component. Doses of each drug that markedly altered punished responding often had little effect on unpunished responding. When local rates of responding within two fixed interval components were similar, pentobarbital and chlordiazepoxide increased punished and unpunished responding to about the same degree, while d-amphetamine and cocaine selectively increased unpunished responding. Results indicate that the effects of drugs on punished responding are largely independent of the nature of the punishing event. 35 references. (Author abstract modified)

003515 Spiehler, Vina R.; Randall, Lowell O. Randall: Dept. of Medical Pharmacology and Therapeutics, School of Medicine, University of California, Irvine, CA 92717 **Agonist-atagonist properties of phenoxybenzamine in antinociception and opiate dependence tests.** European Journal of Pharmacology (Amsterdam). 55(4):389-395, 1979.

The dose/response curve for phenoxybenzamine inhibition of stereospecific tritiated naloxone binding in male Swiss-Webster mouse brain homogenates shifted to the right in the presence of 100mM sodium chloride. The ratio of the concentration of phenoxybenzamine producing 50% inhibition (IC50) in the presence of sodium ions to the IC50 in the absence of sodium ions suggested that phenoxybenzamine would have mixed agonist/antagonist properties in antinociception. This prediction was confirmed in behavioral tests. Phenoxybenzamine antagonized the oxymorphone-induced Straub tail reaction in mice, induced the abstinence syndrome in nonwithdrawn morphine dependent mice, acted as a mixed agonist/antagonist in the tail flick assay, and was intermediate between butorphanol and pentazocine in physical dependence tests. Results suggest that phenoxybenzamine's antinociceptive action is mediated by brain opiate receptors rather than by central alpha-adrenergic receptor blockade. 19 references. (Author abstract modified)

003516 Stapleton, June M.; Lind, Marcia D.; Merriman, Vicki J.; Reid, Larry D. Department of Psychology, Rensselaer Polytechnic Institute, Troy, NY 12181 **Naloxone inhibits diazepam-induced feeding in rats.** Life Sciences (Oxford). 24(26):2421-2425, 1979.

The effect of naloxone on diazepam-induced feeding in male Sprague-Dawley derived rats was examined. Intragastric administration of 25mg/kg diazepam-induced feeding with a stable latency, and the effect did not wane with repeated doses. Naloxone hydrochloride, in subcutaneous doses as small as 0.25mg/kg, inhibited the diazepam-induced feeding. Results suggest that endorphins are involved in the mediation of appetitive behavior. Possible links between benzodiazepine and opiate receptor mechanisms are discussed. 21 references. (Author abstract modified)

003517 Stein, K. Institut fur Toxikologie und Pharmakologie der Philipps-Universitat, Pilgrimstein 2, D-355 Marburg, Germany **A descriptive reassessment of cerebral actions of lindane. 1. The acute excitatory effect.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R69, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the behavioral effects of lindane (L), its perdeuterated analog (L-6D), and pentetrazol (PTZ) in rats are reported. L-6D was more toxic than L following i.p. injection, but the two isotopic forms were equally effective as excitants following i.v. infusion, indicating that the active agent was unaltered L. PTZ acted with a shorter delay and was less spotent than L. However, responses to the two drugs were quite similar following intracerebral injection or i.v. infusion after pretreatment with trimethadione, alpha-hexachlorocyclohexane, reserpine, or L. Results support the suggestion that L causes neuronal excitation by interacting with cellular mechanisms closely related to, or possibly identical to, those acted on by PTZ. (Author abstract modified)

003518 Stephens, D. N.; Herberg, L. J. Department of Child Health, University of Manchester Medical School, Manchester, England **Dopamine-acetylcholine ""balance" in nucleus accumbens and corpus striatum and its effect on hypothalamic self-stimulation.** European Journal of Pharmacology (Amsterdam). 54(4):331-339, 1979.

The suppression of hypothalamic self-stimulation by neuroleptics and its restoration by centrally acting anticholinergic agents were investigated in male Wistar rats. Scopolamine (0.1-1.0mg/kg i.p.)and benzotropine (1.0-10.0mg/kg i.p.)each enhanced self-stimulation when given alone and partially restored performance suppressed by spiroperidol (0.05-0.15mg/kg i.p.). Since benzotropine strongly inhibits dopamine (DA) reuptake but scopolamine does not, the stimulant or antineuroleptic action of the anticholinergic drugs cannot be attributed to inhibition of DA

reuptake. Neuroleptic and anticholinergic effects on self-stimulation rate were mutually substractive, and no evidence of interaction was obtained. Scopolamine also restored performance extinguished by discontinuation of the stimulation current. Smaller doses of scopolamine (50nmol, 19mcg) partially restored responding suppressed by i.p. spiroperidol when injected directly into the nucleus accumbens septi, but not when injected bilaterally into the caudate putamen. Results suggest that hypothalamic self-stimulation may be influenced by dopaminergic and cholinergic systems that exert independent effects on a third system controlling performance. These effects appear to reflect the level of arousal or motivation rather than the reinforcement process itself. 36 references. (Author abstract modified)

003519 Stettner, Laurence J.; Barraco, Robin A.; Klauenberg, B. Jon; Normile, Howard. Department of Psychology, Wayne State University, Detroit, MI 48202 **Puromycin: two distinct behavioral effects with different temporal parameters in the pigeon.** Pharmacology Biochemistry and Behavior. 10(4):521-525, 1979.

Giant White Carneaux pigeons were injected intracerebrally with the protein synthesis inhibitor puromycin (PM) or saline solution at various times after training on a visual discrimination. Retention testing 3 days after training showed that PM produced marked amnesia when administered immediately after training or 1 hour after training, but not when given 24 hours after training. However, all three PM groups were retarded in the number of days required to reach a 90% discrimination criterion. The different temporal gradients of these two behavioral effects suggest that PM may work through two distinct physiological mechanisms. 22 references. (Author abstract modified)

003520 Stinus, Louis; Kelley, Ann E.; Iversen, Susan D. Laboratoire de Psychophysiologie, Universite de Bordeaux I, Avenue des Facultes, F-33405 Talence, France **Increased spontaneous activity following substance-P infusion into A10 dopaminergic area.** Nature (London). 276(5688):616-618, 1978.

The behavioral effects of local application of the polypeptide, substance-P, into the ventral tegmental area (VTA) were investigated in 43 Sprague-Dawley rats to elucidate the physiological role of substance-P innervation of this area. A strong enhancement of spontaneous activity was observed following bilateral infusion, a major feature of which was increased exploratory behavior. D-amphetamine-induced behavioral arousal was also potentiated by previous infusion (1 h) of the substance into the VTA. It is proposed that the substance-P innervation of the VTA is part of a descending feedback loop which modulates the mesolimbic and mesocortical dopaminergic systems tonically. The findings further support the functional neurotransmission hypothesis. 26 references.

003521 Swanberg, Karen M.; Wilson, James R.; Kalisker, Albert. National Asthma Center, 1999 Julian St., Denver, CO 80204 **Developmental and genotypic effects on pituitary-adrenal function and alcohol tolerance in mice.** Developmental Psychobiology. 12(3):201-210, 1979.

Lactating females of mice species bred for long (LS) and short (SS) ethanol-induced sleep time, a measure of alchol tolerance, consumed either tap water or 10% ethanol in tap water on days 2 through 14 postpartum. Effects of genotype and neonatal treatment on offspring open-field behavior, alcohol-induced sleep time, and adrenocortical responsiveness to alcohol or saline injection were studied. The LS mice had higher ethanol-induced sleep times than SS mice and also higher plasma corticosterone levels following alcohol challenge. The LS mice also responded more to saline injection and to novelty stress, suggesting that they were generally more responsive to stressors than SS mice. Significant genotype dependent effects of neonatal treatment were noted on adrenocortical responsiveness to injection stress and alcohol tolerance. These two effects were not causally related. Neonatal treatment had no effect on open-field activity or defecation in either genetic line. 17 references. (Autor abstract modified)

003522 Szekely, J. I.; Dunai-Kovacs, Zsuzs; Miglecz, Erzsebet; Ronai, A. Z.; Bajusz, S. Research Institute of Pharmaceutical Chemistry, H-1325 Budapest, P.O. Box 82, Hungary **In vivo antagonism by naloxone of morphine, beta-endorphin and a synthetic enkephalin analog.** Journalof Pharmacology and Experimental Therapeutics. 207(3):878-883, 1978.

The in vivo equivalent of pA2 values (negative logarithm of dose of antagonist that reduces the effect of a double dose of agonist to that of a single dose) were determined in male CFY rat tail flick and male CFLP mouse hot plate tests for naloxone against morphine, beta-endorphin, and a synthetic enkephalin analog, (D-Met2,Pro5)-enkephalinadmide. In mice, the apparent pA2 value of naloxone against morphine was 6.86; essentially the same values were obtained against the opioid peptides, indicating a homogenous receptor population for the analgesics studied. In rats, the pA2 of naloxone against morphine (7.17) was lower than that against beta-endorphin (7.55) or the enkephalin analog (7.51), indicating that the analgesic receptor population in rats may not be homogenous. 35 references. (Author abstract modified)

003523 Thierry, A. M.; Tassin, J. P.; Blanc, G.; Glowinski, J. Groupe NB, INSERM U. 114, College of France, F-75231 Paris, Cedex 05, France **Studies on mesocortical dopamine systems.** Advances in Biochemical Psychopharmacology. 19:205-216, 1978.

The identification, mapping, and functional role of mesocortical dopamine systems are discussed. Data obtained from a variety of experimental approaches indicate that the dopaminergic cell bodies projecting to the cerebral cortex are localized in the A10-A9 complex of dopaminergic cells. The exact location of the neurons innervating individual cortical areas has not been determined, with the exception of the frontal cortex, which is innervated by dopaminergic cells in the A10 group. Mesocortical dopaminergic neurons and nigrostriatal neurons react differently to neuroleptic treatments, to electric footshock stress, and during self-stimulation behavior. After discrete lesions of the tegmental ventral area, the correlation between the induced locomotor hyperactivity and the decrease in dopamine levels is better in the frontal cortex than in the nucleus accumbens. These findings indicate that the dopaminergic terminals in the frontal cortex and in the nucleus accumbens originate from distinct cell bodies. 45 references.

003524 Tinklenberg, Jared R.; Gillin, J. Christian; Murphy, Greer M., Jr.; Staub, Richard; Wyatt, Richard Jed. Clinical Psychiatry Services, 116A3, Veterans Administration Medical Center, Palo Alto, CA 94304 **Phenylethylamine in rhesus monkeys: interactions with alpha-methyl-p-tyrosine and L-dopa.** American Journal of Psychiatry. 136(3):311-313, 1979.

In a study related to the dopamine theory of schizophrenia, the behavioral effects of the interactions among phenylethylamine (PEA) and alpha-methyl-p-tyrosine (AMPT) and L-dopa were investigated. Rhesus monkeys, pretreated with AMPT and subsequently injected with PEA, did not demonstrate the characteristic amphetamine-like PEA effects. However, when AMPT pretreatment was followed with L-dopa and then PEA injection, PEA effects were restored. Results indicate that PEA effects are associated with dopaminergic activity. 15 references. (Author abstract modified)

003525 Tonoue, Teiichiro; Minagawa, Shozo; Kato, Natsuki; Kan, Masami; Terao, Takashi; Nonoyama, Kiyoko; Ohki, Kosuke. Department of Pharmacology, Tokyo Women's Medical College, Kawatacho, Shinjyuku-ku, Tokyo, 162 Japan **The effect of metal complex of thyrotropin-releasing hormone on locomotor activity of neonatal chicken.** Pharmacology Biochemistry and Behavior. 10(2):201-204, 1979.

The effects of intraventricularly injected thyrotropin releasing hormone (TRH) on locomotor activity in White Leghorn male chickens were compared with those of the nickel (Ni), palladium (Pd), copper (Cu), or zinc (Zn) complexes of TRH. The Ni/TRH complex was more potent than TRH, whereas the Pd/TRH complex was inert. The CU and Zn complexes stimulated locomotor activity to the same extent as TRH. These results indicate that the locomotor stimulatory effect of TRH is dependent on the tertiary conformation of the molecule, which is modified by chelate formation. 15 references. (Author abstract modified)

003526 Trulson, Michael E.; Jacobs, Barry L. Department of Psychology, Green Hall, Princeton University, Princeton, NJ 08540 **Effects of 5-methoxy-N,N-dimethyltryptamine on behavior and raphe unit activity in freely moving cats.** European Journal of Pharmacology (Amsterdam). 54(1/2):43-50, 1979.

Intramuscularly administered 5-methoxy-N,N-dimethyltryptamine (5-MeODMT) produced a dose dependent decrease in the discharge rate of serotonin containing neurons in the dorsal raphe nucleus of freely moving cats. This effect ranged from a 15% decrease at 10mcg/kg to a complete depression of activity at 250mcg/kg. The effect of 5-MeODMT on raphe units occurred with a very short latency (3-5 minutes); its duration of action was dose dependent and did not exceed 1 hour. The degree of depression of raphe unit activity was directly related to the frequency of occurrence of hallucinogen specific behaviors such as limb flick and abortive groom. Results suggest that the behavioral effects of 5-MeODMT can be attributed primarily to its actions on brain serotonin neurons. 26 references. (Author abstract modified)

003527 Vaupel, D. B.; Nozaki, M.; Martin, W. R.; Bright, L. D.; Morton, E. C. National Institute on Drug Abuse, Division of Research, Addiction Research Center, Lexington, KY **The inhibition of food intake in the dog by LSD, mescaline, psilocin, d-amphetamine and phenylisopropylamine derivatives.** Life Sciences (Oxford). 24(26):2427-2431, 1979.

The effects of lysergic acid diethylamide (LSD) and related hallucinogens, phenylisopropylamine derivatives, and amphetamine on food intake in dogs were compared. LSD and d-amphetamine both decreased food intake, but the dose/response curve for amphetamine had a significantly steeper slope than that for LSD. Psilocin and mescaline suppressed food intake with dose response curves parallel to that of LSD, whereas ring substituted phenylisopropylamine derivatives showed dose/response curves parallel to that of d-amphetamine in inhibiting food intake. It is concluded that the appetite suppressant effects of amphetamine and LSD can be distinguished by differences in the slopes of their dose/response curves. However, this difference does not pertain to all LSD-like drugs, since some substituted amphetamines with LSD-like neuropharmacologic and behavioral profiles can show slopes for appetite suppression as steep as that of amphetamine. 12 references. (Author abstract modified)

003528 Vocci, Frank J.; Petty, Sandra K.; Dewey, William L. Department of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **Antinociceptive action of the butyryl derivatives of cyclic guanosine 3':5'-monophosphate.** Journal of Pharmacology and Experimental Therapeutics. 207(3):892-898, 1978.

Intracerebronventricular administration of N2,02-dibutyryl cyclic guanosine 3',5'-monophosphate (db cGMP), N2-monobutyryl cyclic guanosine monophosphate (mb cGMP), or 5'-guanosine triphosphate (5'-GPT) produced antinociceptive activity in the male Swiss-Weber mouse tail flick test. Although cGMP and 5'-GTP were equipotent, antinociceptive doses of 5'-GTP produced severe convulsions; mb cGMP was less potent in the analgesic test and did not produce convulsions. Guanine derivatives and guanosine nucleotides devoid of antinociceptive activity included guanine, guanosine, 2'-guanosine monophosphate, 3'-guanosine monophoshate, 5'-guanosine monophosphate, 5'-guanosine diphosphate, cyclic guanosine 2',3'-monophosphate, 3',5'-monophosphate, and n-butyric acid. These results demonstrate a specific antinociceptive effect of the butyryl analogs of cGMP, an endogenous compound of the CNS. The antinociceptive effect of db cGMP was only weakly antagonized by atropine or naloxone, indicating that the antinociception produced by db cGMP is unlike that produced by acetylcholine or morphine. 28 references. (Author abstract modified)

003529 Vorhees, Charles V. Behavioral Sciences Unit, Division of Inborn Errors of Metabolism, Children's Hospital Research Foundation, Cincinnati, OH 45229 **Facilitation of avoidance acquisition in rats produced by p-chlorophenylalanine or p-chloroamphetamine.** Pharmacology Biochemistry and Behavior. 10(4):569-576, 1979.

The effects of p-chlorophenylalanine (PCPA) and p-chloroamphetamine (PCA) on avoidance acquisition in male Sprague-Dawley rats were examined. PCPA facilitated Y-maze avoidance acquisition and slightly reduced open field activity. PCA reliably facilitated shuttlebox avoidance acquisition at all shock intensities tested. PCA-induced avoidance facilitation developed 8-10 hours after drug treatment and was not observed when with a shorter drug to test interval (4 hours). Results suggest that the reduction of brain serotonin content facilitates avoidance acquisition, regardless of the method used to reduce serotonin or to assess avoidance acquisition. 27 references. (Author abstract modified)

003530 Wachtel, H.; Schlangen, M. Dept. of Neuropsychopharmakologie, Schering AG, Mullerstr. 170-178, D-1000 Berlin 65, Germany **Motorstimulation following the local application of the dopaminergic ergot derivative lisuride into the nucleus accumbens of rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R64, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effcts of lisuride hydrogen maleate (LHM) and apomorphine (APO) on motor behavior in male Wistar rats are described. Bilateral injection of LHM or APO into the nucleus accumbens resulted in dose dependent stimulation of motor activity, with the effect of LHM lasting longer than that of APO. The locomotor stimulatory effect of LHM and APO was also observed in rats pretreated systematically with reserpine and alpha-methyl-p-tyrosine. Systemic pretreatment with pimozide antagonized the hyperactivity induced by LHM or APO, however. Results provide further evidence for the direct dopaminergic action of the ergot derivative LHM in the brain. (Auhtor abstract modified)

003531 Waldmeier, Peter C.; Delini-Stula, Alexandra A. Research Department, Pharmaceuticals Division, Ciba-Geigy Ltd., Basel, Switzerland **Serotonin-dopamine interactions in the nigrostriatal system.** European Journal of Pharmacology (Amsterdam). 55(4):363-373, 1979.

The effects of serotonin uptake inhibitors and receptor blockers on the biochemical and behavioral changes induced by haloperidol were examined in Tif:RAIF (SPF) rats. The serotonin uptake inhibitors citalopram, fluoxetine, clomipramine, and 4-(5,6-dimethyl-2-benzofuranyl)-piperidine hydrochloride (CGP-6085-A) potentiated the haloperidol-induced increase in striatal levels of homovanillic acid and 3,4-dihydroxyphenylacetic acid. In contrast, the serotonin antagonists methysergide, mianserin, and cinanserin antagonized the acceleration of dopamine turnover induced by. Citalopram and CGP-6085-A potentiated both haloperidol haloperidol-induced catalepsy and haloperidol antagonism of apomorphine-induced sterotypies. These results suggest that serotonin antagonists may be of use in reducing extrapyramidal side-effects in schizophrenic patients treated with neuroleptics. 45 references. (Author abstract modified)

003532 Wallnau, Larry B.; Carnrike, Charles L., Jr.; Dewey, Gerald I. Department of Psychology, State University College, Brockport, NY 14420 **Tonic immobility: effects of dopamine receptor blockade and stimulation.** Pharmacology Biochemistry and Behavior. 10(2):177-181, 1979.

Blockade of dopaminergic receptors by haloperidol enhanced the duration of tonic immobility in chickens. Apomorphine, a dopamine receptor agonist, shortened the duration. Apomorphine also produced an increase in stabilimeter activity. Results suggest that dopaminergic systems are involved in tonic immobility. 38 references. (Author abstract modified)

003533 Wallnau, Larry B.; Gallup, Gordon G., Jr. Department of Psychology, State University College, Brockport, NY 14420 **Morphine potentiation of tonic immobility: effects of naloxone, PCPA, and 5,6-DHT.** Pharmacology Biochemistry and Behavior. 10(4):499-504, 1979.

The duration of tonic immmobility, a catatonic-like state produced by brief restraint, was greatly potentiated by a single 1.0mg/kg injection of morphine in Production Red chickens. Naloxone alone had no effect on tonic immobility, and only an exceptionally large dose of naloxone blocked the morphine potentiation. Pretreatment with p-chlorophenylalanine or 5,6-dihydroxytryptamine, which deplete brain serotonin, completely eliminated the morphine enhancement. Results suggest that the effect of morphine on tonic immobility is mediated by a central serotonergic raphe system. 43 references. (Author abstract modified)

003534 Wayner, M. J.; Mintz, R. B.; Jolicoeur, F. B.; Rondeau, D. B. Brain Research Laboratory, Syracuse University, 601 University Avenue, Syracuse, NY 13210 **Effects of methylphenidate on schedule-dependent and schedule-induced behavior.** Pharmacology Biochemistry and Behavior. 10(2):299-302, 1979.

The effects of methylphenidate (1.5, 3.0, 6.0, and 12.0mg/kg) on lever pressing, schedule-induced licking, and drinking were studied in male hooded rats. The animals were tested when reduced to 80% body weight by partial food deprivation and when allowed to recover body weight under condiditon of ad lib eating. Under both body weight conditions, methylphenidate significantly decreased schedule-induced licking and drinking, but did not affect lever pressing. 20 references. (Author abstract modified)

003535 Weinberger, Susan B.; Arnsten, Amy; Segal, David S. Department of Psychiatry, School of Medicine, University of California - San Diego, La Jolla, CA 92093 **Des-tyrosine1-gamma-endorphin and haloperidol: behavioral and biochemical differentiation.** Life Sciences (Oxford). 24(18):1637-1643, 1979.

Des-tyrosine1-gamma-endorphin (DTgE) and haloperidol produced markedly different behavioral and biochemical effects in male Wistar rats. Haloperidol antagonized apomorphine- and amphetamine-induced behaviors, whereas DTgE had no effect. Haloperidol also induced catalepsy in the vertical grid and horizontal bar tests, while DTgE was inactive in both tests. Haloperidol significantly reduced the number of compartment entries and rearings in a multichamber compartment, whereas DTgE reduced only the number of rearings. Haloperidol significantly elevated caudate synaptosomal conversion of tyrosine to dopamine, while DTgE had no effect. Although DTgE and haloperidol both reportedly improve schizophrenic symptomatology, the results of these animal tests suggest that the two drugs exert their effects through different mechanisms. It is suggested that DTgE may be more closely related to atypical neuroleptics such as clozapine and thioridazine than to the classical neuroleptics. 15 references. (Author abstract modified)

003536 Wenger, Galen R. Department of Pharmacology, University of Arkansas for Medical Sciences, 4301 W. Markham St., Little Rock, AR 72201 **Effects of physostigmine, atropine and scopolamine on behavior maintained by a multiple schedule of food presentation in the mouse.** Journal of Pharmacology and Experimental Therapeutics 209(1):137-143, 1979.

The effects of physostigmine, atropine, and scopolamine were studied in male C57BL mice responding under a multiple fixed ratio 30, fixed interval 600 second schedule of food presentation. Physostigmine had no effect on the rate of responding at doses below 0.9mcmol/kg, and higher doses only decreased responding. Atropine and scopolamine produced large increases in the fixed interval rate of responding, which were inversely related to the control rate of responding: low rates of responding were increased proportionally more than high rates were. Atropine, but not scopolamine, decreased the fixed ratio response rate in a monotonic, dose dependent fashion. The effects of high doses of the corresponding quaternary derivatives, neostigmine, methyl atropine, and methyl scopolamine, were similar to those seen at lower doses of the tertiary compounds. It is suggested that the measured behavioral effects of these drugs may not be entirely related to their ability to block muscarinic receptors. 22 references. (Author abstract modified)

003537 Wenzl, H.; Graf, E.; Sieck, A. A. Nattermann & Cie. GmbH, HA Pharmakologie, Nattermannallee 1, D-5000 Cologne 30, Germany **Central nervous effects of a new tricyclic antidepressant (amitriptylinoxide) on laboratory animals.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1874-1879, 1978.

The central action of amitriptylinoxide was investigated in mice and rats using established models. The substance was found to possess antidepressant, drive promoting properties which correspond to or are superior amitriptyline in their intensity. In addition, the pharmacodynamic spectrum of amitriptylinoxide displays a sedative component that is considered a desirable accompanying effect but is somewhat weaker than with amitriptyline. According to revealed differences between the pharmacological activites of amitriptylinoxide and those of other tricyclic antidepressants, it is reasonable to undertake further studies to investigate its main and side-effects. 6 references. (Author abstract)

003538 Wielosz, M.; Kleinrok, Z. Department of Pharmacology, Institute of Clinical Pathology, Medical Academy, 20-090 Lublin, Poland **Lithium-induced head twitches in rats.** Journal of Pharmacy and Pharmacology (London). 31(6):410-411, 1979.

The effects of lithium chloride and 5-hydroxytryptamine (5-HT) antagonists on head twitches in rats were investigated. The number of head twitches was counted for 60 minutes after lithium chloride injection. The 5-HT antagonists, danitracen, methergoline, cyproheptadine, and reserpine were injected 1 hour

prior to lithium chloride administration so that their effects on the head twitch response to lithium could be observed. It was found that pretreatment with the 5-HT antagonists decreased the head twitches induced by lithium. It is concluded that lithium induced head twitches could be dependent on 5-HT receptor stimulation. It is suggested that head twitches may constitute a useful animal model for quanitifying 5-HT activity in the brain. 15 references.

003539 Wolfarth, S.; Coelle, F. E.; Osborne, N. N.; Sontag, K.-H.; Wand, P. Max-Planck-Institut fur Experimentelle Medizin, Abtlg. Biochem. Pharmakol., Hermann-Rein-Str. 3, D-3400 Gottingen, Germany **Apomorphine (APO) and amphetamine (AMPH)-induced stereotypies and asymmetric behaviour after substantia nigra (SN) lesions in cats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R64, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, apomorphine (APO) and amphetamine (AMPH)-induced behaviors in cats with lesions of the posterior part of substantia nigra, induced electrothermically or by 6-hydroxydopamine (6-OHDA), are described. As in rats, both APO and AMPH enhanced locomotor activity and evoked stereotyped sniffing and head nodding movements in cats. However, the drugs did not evoke stereotyped licking and gnawing in cats as they do in rats. Histochemical examinations indicatd that the electrothermic lesions, which were not specific for dopamine, produced more pronounced ipsilateral asymmetric behavior following APO and AMPH than did the 6-OHDA lesions. No contralateral asymmetries were observed in any animal. It is suggested that the ipsilateral asymmetric behavior seen in the lesioned cats was due to the destruction of a noncatecholaminergic output. The weaker asymmetric behavior observed after lesions with 6-OHDA may be attributable to a nonspecific lesion produced by the solvent (1% ascorbic acid) used in the 6-OHDA injections. 2 references. (Author abstract modified)

003540 Wurtman, Judith J.; Wurtman, Richard J. Laboratory of Neuroendocrine Regulation, Dept. of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, MA 02139 **Drugs that enhance central serotoninergic transmission diminish elective carbohydrate consumption by rats.** Life Sciences (Oxford). 24(10):895-903, 1979.

The serotoninergic drugs fenfluramine and MK-212 reduced food intake but maintained protein consumption in Sprague-Dawley rats allowed to choose between low and high protein diets. Rats allowed to choose between pairs of diets that differed in carbohydrate content were able to regulate their carbohydrate intake, regardless of the relative sweetness of the carbohydrate ingested. Fenfluramine and MK-212 decreased carbohydrate intake, as well as food (caloric) intake, while increasing the ratio of protein to carbohydrate in the food consumed. Fenfluramine simultaneously maintained protein consumption and reduced carbohydrate consumption among animals allowed to choose these two nutrients independently of each other. It is proposed that serotoninergic neurons comprise part of a behavioral feedback loop, whereby the consumption of carbohydrates alters plasma amino acid patterns, accelerates serotonin synthesis, and diminishes the subsequent tendency to consume additional carbohydrates. Drugs that enhance central serotoninergic transmission may be effective substitutes for dietary carbohydrate in activating this feedback loop. 7 references. (Author abstract modified)

003541 Young, Gerald A.; Steinfels, George F.; Khazan, Naim. Department of Pharmacology and Toxicology, University of Maryland School of Pharmacy, 636 West Lombard Street, Baltimore, MD 21201 **Spontaneous vs. naloxone-induced abstinence in dependent rats self-administering L-alpha-acetylmethadol (LAAM) or morphine.** Pharmacology Biochemistry and Behavior. 10(4):585-589, 1979.

The effects of naloxone precipitated withdrawal from morphine or l-alpha-acetylmethadol (LAAM) on rapid eye movement (REM) sleep was examined in morphine and LAAM dependent female Sprague-Dawley rats. REM sleep was suppressed to a similar degree and for a similar duration during naloxone-induced abstinence from morphine or LAAM. When abstinence was induced by substitution of saline for LAAM or morphine, differential effects were observed in LAAM and morphine dependent rats: REM sleep was not disturbed in the LAAM dependent animals and leverpressing for saline peaked at about 24 hours, whereas REM sleep was suppressed for 24 hours in the morphine dependent animals and lever-pressing for saline peaked within 8 hours. Results suggest that the level of physical dependence maintained during self-administration of LAAM and morphine was similar. The relatively mild abstinence syndrome seen during saline substitution in LAAM dependent rats may be related to the long plasma half lives of the pharmacologically N-demethylated metabolites of LAAM. 14 references. (Author abstract modified)

003542 Zarevics, Peter; Setler, Paulette E. Department of Biological Research, Smith Kline and French Laboratories, Philadelphia, PA 19101 **Simultaneous rate-independent and rate-dependent assessment of intracranial self-stimulation: evidence for the direct involvement of dopamine in brain reinforcement mechanisms.** Brain Research (Amsterdam). 169(3):499-512, 1979.

The role of dopamine in brain reward mechanisms was investigated in male Sprague-Dawley rats in a two level intracranial self-stimulation (ICSS) paradigm in which rate independent and dependent measures of ICSS could be obtained simultaneously. An elevated reward threshold was observed following treatment with pimozide, a specific blocker of dopamine receptors. This effect could be duplicated in control animals by making each stimulation less rewarding (decreasing the amount of charge per stimulation). Pimozide increased reward threshold without inducing a generalized disruption of response rates. Rates were decreased at low currents but unchanged at high currents after pimozide. D-amphetamine decreased reward threshold and produced a dose related decrease in response rates at high to medium current intensities. These findings suggest that neuroleptic attenuation of ICSS is due to diminished reward (rather than to motor deficits) and suggest a direct role for dopamine in the mediation of reward. 39 references. (Author abstract modified)

05 TOXICOLOGY AND SIDE EFFECTS

003543 Abel, E. L. Research Institute on Alcoholism, 1021 Main Street, Buffalo, NY 14203 **Prenatal effects of alcohol on adult learning in rats.** Pharmacology Biochemistry and Behavior. 10(2):239-243, 1979.

The effects of prenatal exposure to alcohol on adult learning was assessed in Long-Evans hooded rats. Ethanol was administered orally to pregnant rats each day throughout gestation. Pups were removed from their biological mothers at birth and were raised by untreated surrogate mothers. At 5 months of age, male and female offspring of the ethanol treated rats weighed less than controls. The female offspring performed significantly worse than the offspring of vehicle treated, pair fed control mothers on a two-way shock avoidance task. There were no significant group differences for either sex in water escape maze learning. 12 references. (Author abstract modified)

003544 Bornhausen, M.; Musch, H. R.; Matthes, R. Department of Radiation Biology, Gesellschaft fur Strahlen- und Um-

weltforschung, D-8042, Neremberg, Germany **Behavioural changes in rats after prenatal administration of methylmercury chloride: determination of the lowest effective dose.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R21, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of prenatal exposure to methylmercury chloride (MMC) are discussed. MMC was administered in doses of 0.005, 0.01, or 0.05mg/kg/day to pregnant rats on the sixth, seventh, eight, and ninth day after conception. Offspring were tested at 4 months of age on a differential reinforcement of high rates (DRH) schedule. Impairment of DRH learning and discrimination performance were most prominent in the rats treated prenatally with 0.05mg/kg MMC for 4 days; in two consecutive test sessions, deficits of 25.7and 24.6% in females and 37.9and 57.2% in males were observed, compared to controls. No lactation mediated performance differences were observed. It is concluded that the lowest effective dose of MMC in this test is between 0.05-0.005mg/kg for 4 days. 1 reference. (Author abstract modified)

003545 Chandra, Satya V.; Shukla, Girja S.; Murthy, R. C. Industrial Toxicology Research Center, Lucknow 226001, India **Effect of stress on the response of rat brain to manganese.** Toxicology and Applied Pharmacology. 47(3):603-608, 1979.

In a study of the neurotoxic effects of manganese (Mn) combined with immobilization stress, male hooded rats were immobilized for 2 hours and injected i.p. with 4mg/kg Mn2 daily for 30 days. The increase in the brain concentration of Mn after Mn in combination with immobilization stress was almost identical to that observed after Mn alone, indicating that stress did not alter the CNS balance of Mn. However, marked alterations in the contents of tyrosine, tryptophan, dopamine, and norepinephrine in the brain tissue after combined treatment with Mn and immobilization stress suggest that the neurotoxic effects of the metal may be more pronounced in a stressful situation. 18 references. (Author abstract modified)

003546 Day, H. D.; Hupp, Eugene W. Box 23029, Texas Woman's University, TWU Station, Denton, TX 76204 **Effects of co-insults of methyl mercury and gamma radiation on the open-field, sexual, and conditioned-avoidance behavior of the albino rat.** Psychological Record. 29(2):275-285, 1979.

The simple and combined effects of ionizing radiation and methyl mercury poisioning on various behaviors of the albino rat were investigated. Rats were assigned to six treatment groups in which they received 4.5or 9kR total body radiation, 4 or 8mg methyl mercuric chloride (MMC) per kg bodyweight, coinsults of low radiation with low MMC or high radiation with high MMC, and a control group. The open-field tests showed no effects of mercury alone, but a significant reduction of activity was produced by both levels of radiation administered as single insults. The sexual performance of animals receiving MMC and radiation as single insults was disrupted by low and high levels of both treatments. Surprisingly, in the open-field and sexual behavior tests, there was found to be a consistent though statistically insignificant tendency for the coinsult treatment groups to show fewer disruptive effects than were shown by the radiation alone groups. The results of other coinsult studies are discussed. 17 references. (Author abstract modified)

003547 Desager, J. P.; Leonard, J. P.; Vanderbist, M.; Harvengt, C. Universite Catholique de Louvain, Laboratoire de Pharmacotherapie, B-1200 Brussels, Belgium **Reduced cardiac output and renal blood flow during amitriptyline intoxication in conscious rabbits.** Toxicology and Applied Pharmacology. 47(3):445-449, 1979.

The hemodynamic effects of amitriptyline were recorded in conscious Flemish rabbits using radioactive microspheres. Cardiac output and renal blood flow were markedly reduced by amitriptyline, while peripheral vascular resistance was increased. Results indicate that the reduction in cardiac outflow and renal blood flow is probably due to early myocardial depression elicited by amitriptyline rather than to peripheral vascular collapse. 6 references. (Author abstract modified)

003548 Dietz, D. D.; McMillan, D. E.; Mushak, P. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **Effects of chronic lead administration on acquisition and performance of serial position sequences by pigeons.** Toxicology and Applied Pharmacology. 47(2):377-384, 1979.

The effects of chronic lead administration on acquisition and performance of serial position sequences by pigeons were investigated. Male White Carneaux pigeons were trained to peck three illuminated response keys in a predetermined four-step position sequence. For one group of birds the correct sequence was changed each day and for the other group of birds the sequence remained the same. Errors by birds in the performance group increased soon after lead intubations were begun while birds in the repeated acquisition group failed to demonstrate visible increases in errors. Decreases in blood lead concentrations were seen approximately 5 weeks after termination of lead exposure. Only one bird showed a satisfactory recovery during this nonlead period. These data suggest that the more stable error rates maintained under the performance schedule are more sensitive to the effects of lead than the less stable error rates maintained under the acquisition schedule. 27 references. (Author abstract modified)

003549 Friehe, H.; Fontaine, R. Abt. Toxikologie, A. Nattermann & Cie. GmbH, Nattermannallee 1, D-5000 Cologne 30, Germany **Toxicology of amitriptylinoxide.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1898-1907, 1978.

Toxicological studies were conducted to test the antidepressant amitriptylinoxide for intolerance reactions and side-effects. In some instances, it was evaluated against amitriptyline-HC1. An attempt was also made to evaluate possible toxic responses due to the concurrent use of acetyl salicylic acid, and a search for a suitable antidote was conducted. Single dose studies with oral administration of amitriptylinoxide showed that there is little scatter in the median lethal doses in mice, guinea-pigs, rabbits, and dogs, the LD50 being between 330 and 460mg/kg. Single dose comparison studies in rats and mice against amitriptyline-HC1 showed amitriptylinoxide to be the least toxic of the two. No teratogenous properties of amitriptylinoxide were found in experiments with rabbits, rats, and dogs. It is suggested that physostigmine may be useful as an antidote in cases of overdosage or suicidal attempts. 28 references. (Author abstract modified)

003550 Gomoll, A. W.; Byrne, J. E.; Deitchman, D. Biologic Research, Mead Johnson Pharmaceutical Division, Evansville, IN 47721 **Hemodynamic and cardiac actions of trazadone and imipramine in the anesthetized dog.** Life Sciences (Oxford). 24(20):1841-1847, 1979.

The cardiovascular effects of the antidepressants trazodone and imipramine were compared in dogs. Trazodone lowered arterial blood pressure (0.3mg/kg), slowed heartrate (3mg/kg), and reduced myrocardial contractile force (3-10mg/kg) following i.v. administration. Low i.v. doses (0.05-0.d15mg/kg) of imipramine increased arterial blood pressure and heartrate, but

higher doses (1.5and 5mg/kg) had depressant effects. Trazodone effected a substantial level of alpha-adrenergic blockade against a fixed challenge dose of norepinephrine, but imipramine did not. Both drugs reduced aortic flow, but the reduction following trazodone resulted from a decrease in heartrate, whereas imipramine acted by lowering stroke volume. It is concluded that trazodone, unlike imipramine, should have little tendency of compromise cardiac function when administered at therapeutic doses. 19 references. (Author abstract modified)

003551 Hughes, I. E.; Radwan, Salwa. Department of Pharmacology, Medical and Dental Building, University, Leeds LS2 9JT, England **The relative toxicity of amitriptyline, imipramine, maprotiline and mianserin in rabbits in vivo.** British Journal of Pharmacology (London). 65(2):331-338, 1979.

The relative toxicity of four antidepressants (amitriptyline, imipramine, maprotiline, and mianserin) was assessed in conscious and anesthetized New Zealand White rabbits. Mean lethal doses were lowest for amitriptyline, highest for mianserin, and intermediate for imipramine and maprotiline. Convulsions were induced by all four drugs in conscious rabbits; the descending order of potency was amitriptiline, imipramine, maprotiline, mianserin. All four drugs also reduced heartrate and blood pressure in anesthetized rabbits (amitriptyline, imipramine, maprotiline, mianserin, in descending order of potency). Significant changes in the electrocorticogram were also observed after all four drugs. It is concluded that the drugs show the toxic effects classically associated with tricyclic antidepressants. The relative toxicity among these agents varied considerably, however, with amitriptyline being far more toxic than mianserin and imipramine and maprotiline having intermediate toxicity. 22 references. (Author abstract modified)

003552 Ilyas, M. S.; de la Iglesia, F. A.; Feuer, G. Dept. of Clinical Biochemistry, University of Toronto, Toronto, Ontario, Canda **The effect of phenobarbital and carbon tetrachloride on fatty acid content and composition of phospholipids from rat liver.** Toxicology and Applies Pharmacology. 45(1):69-77, 1978.

The administration of phenobarbital or carbon tetrachloride to male Wistar rats caused various changes in hepatic fatty acid content and composition. Phenobarbital elicited no effect on the total amount of fatty acids but significantly decreased myristic, pentadecanoic, and arachidonic acids and increased eicosatrienoic, eicosapentenoic, lignoceric, and docosatrienoic acid. Carbon tetrachloride generally showed opposite effects to those of phenobarbital. Unsaturated fatty acid moieties participating in the structure of these phosphatides were increased by phenobarbital and diminished by carbon tetrachloride. The contrasting effects of phenobarbital and carbon tetrachloride on fatty acid composition and metabolism may suggest that the disposition of lipid constituents plays a determinant role in the hepatic action of foreign compounds. 32 references. (Author abstract modified)

003553 Jeste, Dilip V.; Stoff, David S.; Potkin, Steven G.; Wyatt, Richard Jed. Laboratory of Clinical Psychopharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Tardive dyskinesia: study on an animal model. (Unpublished paper).** Washington, DC, NIMH, 1979. 22 p.

Prevention of and susceptibility to tardive dyskinesia (TD), which is a complication of chronic neuroleptic therapy, were studied in an animal model. The model involved demonstration of behavioral supersensitivity to amphetamine following long-term oral administration of haloperidol to rats. The results indicate that: 1) intermittent administration of haloperidol does not retard development of supersensitivity; and 2) initial low responders to amphetamine develop greater percentage increase in activity counts in response to amphetamine following chronic haloperidol treatment than do initial high responders. These findings suggest two clinically important and testable hypotheses: 1) intermittent neuroleptic treatment may not prevent TD; and 2) initial amphetamine response may predict susceptibility to TD. Value and limitations of animal models are discussed. 17 references. (Author abstract)

003554 Kelley, Keith W.; McGlone, John J.; Froseth, John A. Dept. of Animal Sciences, Washington State University, Pullman, WA 99164 **Lithium toxicity in pregnant swine.** Proceedings of the Society for Experimental Biology and Medicine. 158(1):123-127, 1978.

To study effects of chronic lithium ingestion during gestation on the dam and offspring using the pig as an experimental model, 23 pregnant swine were fed either 2.3kg of a ration containing 2818 kcal metabolizable energy/kg once daily or fed the same ration supplemented with 3000mg Li2C03/kg and fed ad libitum during the final 80 days of gestation. Lithium fed females voluntarily consumed 2.8kg/day but lost 27 kg of body weight during gestation and weighed less than control females at 110 days of gestation. Only 58% of lithium fed females completed pregnancy while all control animals did. Females consuming lithium gave birth to fewer live piglets, more mummies and stillbirths and lighter litters. Fewer of the liveborn piglets born to lithium treated females survived to 21 days of age. It is suggested that lithium caused these toxic effects by interfering with absorption or metabolism of dietary nutrients. Data also demonstrate that short-term gestation studies with rats and mice may not be applicable to humans. 25 references. (Author abstract modified)

003555 Langer, J.; Seeber, U.; Kuschinsky, K. Max-Planck-Institut fur Experimentelle Medizin, Hermann-Rein-Str. 3, D-3400 Gottingen, Germany **Effect of haloperidol on reflex activation of alpha-motorneurones in rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R64, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effect of haloperidol on the function of alpha-motoneurons in rats is described. Rats were laminectomized under halothane anesthesia and the activation of alpha-motoneurons was recorded from single filaments of the ventral roots during mild tetanic stimulation of the gastrocnemius-soleus (extensor alpha-motoneurons) or of peroneal nerve afferents (flexor alpha-motoneurons). Haloperidol (0.075-0.60mg/kg i.p.)inhibited the stimulation-induced activation of both flexor and extensor alpha-motoneurons in a dose dependent manner. Subcutaneous administration of the dopaminergic agonist apomorphine (2mg/kg) antagonized the inhibitory effect of haloperidol. In spinalized rats, the inhibitory effect of haloperidol was enhanced and resistant to apomorphine antagonism. It is suggested that impaired activation of alpha-motoneurons by proprioceptive stimuli may contribute to the Parkinsonian-like alteratins in motility observed after administration of dopaminergic blockers. (Author abstract modified)

003556 Pagano, R. R.; Graham, C. W.; Galligan, M.; Conner, J. T.; Katz, R. L. Department of Anaesthesiology, University of California, Los Angeles, CA 90024 **Histopathology of veins after intravenous lorazepam and RO21-3981.** Current Therapeutics 19(11):96-97, 1978.

Since diazepam is often associated with thromboplebitis after injection, a rat vein model to study this effect was developed. An evaluation of lorazepam, diazepam, and RO21-3981 (a new water soluble benzodiazepine) is also reported. Lorazepam and RO21-3981, both in two different dosages, and propylene glycol in two doses, and normal saline were infused slowly into rat sa-

phenous veins. After 48 hours, the veins were removed and examined by light microscopy. Intravenous injection of normal saline did not alter the normal histology of the veins. Infusion of lorazepam 0.012mg resulted in an histological picture similar to saline; vascular integrity was not altered. In marked contrast, lorazepam 0.2mg resulted in pronounced vascular inflammation, including vessel dilation, oedema and leukocyte infiltration, with subsequent thrombosis. Propylene glycol caused effects similar to a high dose range of RO21-3981. It is suggested that propylene glycol may play a role in the pathogenesis of the intravascular injury. Dilution of the injected drug is also concluded to result in less morbidity. Both of these factors can be turned to the anesthetist's advantage by injecting intravenous drugs into freely flowing crystalloid solutions which in turn enter the largest available veins.

003557 Siegel, Shepard; Hinson, Riley E.; Krank, Marvin D. Department of Psychology, McMaster University, Hamilton, Ontario L8S 4K1, Canada **Modulation of tolerance to the lethal effect of morphine by extinction.** Behavioral and Neural Biology. 25(2):257-262, 1979.

An experiment was conducted to further assess whether an extinction procedure affects tolerance to the lethal effects of morphine in rats. Results demonstrate that rats administered a fatal dose of morphine following a tolerance extinction procedure died more quickly than rats with the same pharmacological history but without the extinction experience. Results suggest that learning is involved in tolerance to lethal doses of morphine. 20 references. (Author abstract modified)

003558 Thomsen, Klaus; Olesen, Ole Vendelin. Psychopharmacology Research Unit, Psychiatric Hospital, DK-8240 Risskov, Denmark **Lithium-induced acute renal failure in the rat.** Toxicology and Applied Pharmacology. 45(1):155-161, 1978.

The effects of lithium on kidney function were examined in male Wistar rats given 8mM/kg intraperitoneal lithium chloride as a 150mM solution once a day. After 2 to 4 days of lithium administration, the animals lost 10 to 20g bodyweight. Other signs of intoxication were impaired gastric emptying, muscle twitchings, hyperexcitability, and increased serum urea concentration. The rats were anesthetized with sodium amytal and hydrated with isotonic sodium chloride before and during clearance determinations. Inulin clearance was lowered by 40%, and a proportionate decrease in renal plasma flow was observed. Plasma renin concentration was increased by a sixfold factor. Results suggest that lithium led to acute renal failure. Both circulatory disturbances and a direct toxic effect of lithium in the tubules are considered possible causes of the acute renal failure. 19 references. (Author abstract)

003559 Tye, Nicholas C.; Horsman, Linda; Wright, Francesca C.; Pullar, Ian A. Lilly Research Centre Limited, Erl Wood Manor, Windlesham, Surrey GU20 6PH, England **Differential enhancement of locomotor activity by dopamine agonists following chronic neuroleptic treatment: an animal model of tardive dyskinesia.** European Journal of Pharmacology (Amsterdam). 55(1):103-107, 1979.

Following chronic treatment with clozapine or haloperidol for 22 days, male Wistar rats were challenged with lergotrile or an apomorphine ester. Lergotrile potentiated locomotor activity in both groups, but responses to apomorphine were significantly enhanced only in the haloperidol treated animals. Results suggest that different dopaminergic agonists can be used to dissociate receptor supersensitivity arising from the antipsychotic actions of neuroleptics from that leading to the development of undesirable side-effects. 10 references. (Author abstract modified)

003560 Yasuhara, Hajime; Dujovne, Carlos A.; Ueda, Issaku; Arakawa, Kasumi. Showa University, School of Medicine, Tokyo, Japan **Hepatotoxicity and surface activity of tricyclic antidepressants in vitro.** Toxicology and Applied Pharmacology. 47(1):47-54, 1979.

The cytotoxicity of tricyclic antidepressants in isolated male Sprague-Dawley rat hepatocytes was determined by the leakage of cytoplasmic and lysosomal enzymes into surrounding media. The descending rank order of toxicity was chlorimipramine, nortriptyline, amitriptyline, imipramine, doxepin. All the tricyclic antidepressants lowered the surface tension of the salt solution in the tissue culture media and the rank order of surface activity was the same as that for hepatotoxicity in vitro. Results suggest that the differences in membrane damage produced by the tricyclics may be related to surface activity, which in turn may determine the extent of absorption onto cell membranes. 28 references. (Author abstract modified)

06 METHODS DEVELOPMENT

003561 Blombery, P. A.; Markey, S. P.; Kopin, I. J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Negative ion chemical ionization mass spectrometry of 3-methoxy-4-hydroxyphenylglycol (MHPG). (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

A sensitive assay for the norepinephrine metabolite, 3-methoxy-4-hydroxyphenylglycol (MHPG), which was developed using negative ion chemical ionization gas chromatography mass spectometry, is described. MHPG is derivatized with hexafluoroacetone to form a cyclic ketal, followed by trifluoroacetylation of the phenol. Unlike acyclic acyl derivatives, the hexafluoroketal captures electrons efficiently and produces a large molecular ion which enables detection as low as 5pg/injection using selected ion monitoring. This method is 100 fold more sensitive than the electron impact method previously used and permits quantitation of MHPG in biological samples with very low interfering background. (Author abstract)

003562 Brownstein, Michael J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20205 **Localizing peptides in the central nervous system: a progress report. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 15 p.

The strengths and weaknesses of the biochemical approach to peptide localization in the brain are shown in a review of three peptide hormones: 1) alpha-melanocyte stimulating hormone (alpha-MSH) and its relatives adrenocorticotropic hormone (ACTH) and endorphin, 2) insulin, and 3) somatostatin. These studies illustrate how biochemical and anatomical studies can (and should) go hand in hand, and they show the relevance of information about peptide distribution to investigators who are interested in receptors. The data show that: 1) no method for measuring or visualizing peptides in the body is absolutely specific; 2) by using radioimmunoassays or bioassays together with chromatographic techniques, workers in a number of laboratories are beginning to show that many of the peitides in the brain belong to sets of biologically active, structurally related molecules (for example, alpha-MSH and beta-MSH do not seem to be the only melanotropic peptides in the brain); and 3) the identification and characterization of peptide precursors and the development of methods for studying precursor biosynthesis are essential for the future of peptide research. 42 references.

003563 Coyle, Joseph T. Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD **An animal model for Huntington's disease.** Biological Psychiatry. 14(2):251-276, 1979.

The development of an animal model for Huntington's disease (HD) is reported. Injection of kainic acid, a potent neuroexcitant structurally related to glutamic acid, into the rat striatum causes a selective neuronal degeneration resembling that of HD. Striatal cholinergic and GABAergic neurons, including their terminal projections in the substantia nigra, are affected by kainate; dopaminergic axons innervating the striatum as well as corticofugal fibers passing through the region are spared. Studies in vivo and in vitro with kainate and its analogues suggest that the potent neurotoxicity of kainate involves a cooperative interaction between synaptically released glutamate and injected kainate on vulnerable neurons; prior destruction of cortico striatal glutamatergic afferents attenuates kainate's neurotoxicity. It is noted that the kainate model has been used to test drugs that may be of therapeutic benefit for HD. 74 references. (Author abstract modified)

003564 Flanagan, Steven D.; Storni, Angelo. Division of Neurosciences, City of Hope National Medical Center, 1500 E. Duarte Road, Duarte, CA 91010 **An 125 I-labeled binding probe for the muscarinic cholinergic receptor.** Brain Research (Amsterdam). 168(2):261-274, 1979.

The synthesis and characterization of 125I-labeled 3-quinuclidinyl-(3-iodo-4-hydroxy-benzilate) (I-OH-QNB), a binding probe for muscarinic cholinergic receptors, is described. The binding isotherm of I-OH-QNB to a rat synaptic plasma membrane enriched fractions consisted of two components: a specific component that was saturable and closely fit hyperbolic binding to a single class of sites as evaluated by Scatchard analysis, and a linear component that could be measured directly by preincubating membranes in 0.1mcM 3-quinuclidinyl-benzilate (QNB). The specific binding of tritiated QNB and I-OH-QNB to rat brain subcellular fractions was parallel in myelin, synaptic plasma membrane, and mitochondrial fractions, with a 3-4-fold enrichment in synaptic plasma membrane relative to mictochondrial fractions. The concentrations of muscarinic antagonists required to block I-OH-QNB binding paralleled that reported for triatiated binding probes and were consistent with physiological measurements of their dissociation constants. As a result of its high specific radioactivity, I-OH-QNB should be a useful binding probe for assaying low levels of muscarinic receptors in tissue culture and other biological sources. 41 references. (Author abstract modified)

003565 Gottschalk, Louis A.; Dinovo, Eugene C.; Nandi, Bina R. Biochemistry Laboratory, Department of Psychiatry and Human Behavior, College of Medicine, University of California, Irvine, CA 92717 **The assay of plasma concentration of thioridazine and its metabolites as a function of time.** Communications in Psychopharmacology. 2(6):475-479, 1978.

A plasma sample consisting of thioridazine, mesoridazine, thioridazine-S-sulfone, and thioridazine-R-sulfoxide was prepared by adding measured volumes of stock solutions (1.0mg/ml) to a measured quantity of pooled plasma. Aliquots of 4ml were pipetted into separate covered test tubes and kept frozen at -20 degrees C until used. Spectrophotofluorometric and gas chromatographic assays were done on three samples selected randomly and periodically for up to 1 year. No discernible changes in the concentrations of these compounds were observed. Results indicate that assays of plasma samples stored under these conditions can provide valid results. 6 references. (Author abstract modified)

003566 Hahn, E. F.; Fishman, J. H.; Fishman, J. Rockefeller University, 1239 York Avenue, New York, NY 10021 **High sensitivity solid phase exchange radioimmunoassay for morphine.** Journal of Pharmacy and Pharmacology (London). 31(4):250-252, 1979.

A high sensitivity solid phase exchange radioimmunoassay for morphine is described. The method uses immobilized antibodies and the assay depends on the rate of exchange as a function of the concentration of unlabeled drug in solution. The simplicity and sensitivity of the method make it exceptionally useful in determining morphine concentrations in biological fluids and tissues. 17 references.

003567 Lerner, Pauline; Nose, Peter; Ames, Matthew M.; Lovenberg, Walter. Section on Biochemistry and Pharmacology, Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Modification of the tyrosine hydroxylase assay: increased enzyme activity in the presence of ascorbic acid.** Neurochemical Research. 3(5):641-651, 1978.

The tyrosine hydroxylase assay was modified by using ascorbate, rather than 2-mercaptoethanol or dihydropteridine reductase with nicotinamide adenine dinucleotide phosphate (reduced), as the reductant. Tyrosine hydroxylase activity was three to four times higher with ascorbate than with the other reducing agents. Low blanks were obtained with the ascorbate system when catalase was also included. When the ascorbate assay was used to study the tissue distribution and kinetic activation of tyrosine hydroxylase in male Sprague-Dawley rat brain, the results were consistent with the biological and regulatory properties of the enzyme determined with the other reducing systems. 25 references. (Author abstract modified)

003568 Sokoloff, Louis. Laboratory of Cerebral Metabolism, NIMH, Bethesda, MD 20205 **The (14C)dexoyglucose method: four years later. (Unpublished paper).** Bethesda MD NIMH, 1979, 10 p.

The value of the (14C)deoxyglucose method for the quantitative determination of local cerebral glucose utilization is examined in the light of 4 years of use. Data presented include: rate constants and lumped constant; the role of glucose-6-phosphatase; and influence of varying plasma glucose concentrations. The applications of the (14C)deoxyglucose method (physiological studies, pharmacological studies, and pathological conditions) are discussed. Computerized image processing, microscopic resolution, and the (18F)fluorodeoxyglucose technique, which extend the resolution of the (14C)deoxyglucose method in animals and allow its modification and adaptation in man, are reviewed. 18 references.

003569 Thiede, H.- M.; Kehr, W. Dept. Neuropsychopharmakologie, Schering AG, Mullerstr. 170-178, D-1000 Berlin 65, Germany **Radioenzymatic determination of endogenous DOPA in rat brain and blood plasma.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R61, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, a radioenzymatic assay for determination of endogeneous DOPA in brain and plasma is described, which makes use of the enzymatic transfer of the labeled methyl group of tritiated S-adenosylmethionine (SAM) by catechol-O-methyltransferase (COMT). Endogenous DOPA from rat brain or heparinized blood plasma was extracted into perchloric acid and purified on a cation exchange column. The ammonium acetate buffer column eluate containing DOPA was lypophilized, the residue was dissolved in perchloric acid, and an aliquot was incubated with COMT and SAM. The reaction product, tritiated methoxytyrosine, was isolated by cation and anion exchange chromatography and measured in a scintillation counter. The recovery of 1ng authentic L-DOPA added to brain homogenates was about 80%, and as little as 50pg DOPA could be detected. DOPA levels in whole brain of Wistar rats killed by focused micro-

wave irradiation were about 10ng/g, using this assay. The highest DOPA levels were found in the dopamine rich part of the limbic system and the lowest values in cerebellum. Blood plasma of rats and humans contained about 2ng DOPA 2ng/ml DOPA. 1 reference. (Author abstract modified)

003570 Van den Eeckhout, E.; Belpaire, F. Akademisch Zieenhuis, De Pintelaan, B-9000 Ghent, Belgium **Analytical methods for the determination of bromperidol in plasma.** Acta Psychiatrica Belgica (Bruxelles). 78(1):64-68, 1978.

In a paper presented at the International Symposium on Bromperidol, held in November 1977 in Bruges, Belgium, analytical methods for determination of the neuroleptic bromperidol in plasma are reported. Comparative data are presented for the quantitative determination of bromperidol by mass fragmentography, gas chromatography with electron capture detection, and radioimmunoassay. Results indicate that only radioimmunoassay is sensitive enough to allow the easy determination of the low plasma levels to be expected for bromperidol. 2 references. (Author abstract modified)

CLINICAL PSYCOPHARMACOLOGY

07 EARLY CLINICAL DRUG TRIALS

003571 Borgen, Lowell A. Clinical Research Dept., Warner-Lambert/Parke-Davis, Ann Arbor, MI **Trebenzomine: a new psychotropic agent with potential as an antipsychotic and an antidepressant.** Psychopharmacology Bulletin. 15(2):92-94, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, a new psychotropic agent with potential as an antipsychotic and an antidepressant, trebenzomine, is described. Results of five double-blind, controlled trials of trebenzomine (CI-686) examining its antidepressant/anxiolytic potential and neuroleptic efficacy are reviewed. In general, the drug is well tolerated with a low incidence of extrapyramidal or adverse cardiovascular effects. 4 references.

003572 Claghorn, James L.; Mathew, Roy J.; Johnstone, Edwin E. Texas Research Institute of Mental Sciences, Houston, TX **Dothiepin HCl in the treatment of psychoneurosis.** Psychopharmacology Bulletin. 15(2):94-95, 1979.

In a summary of a paper at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, the use of a new antidepressant, Depresym (dothiepin HCl) in the treatment of psychoneurosis, is described. Results of a double-blind, parallel group, multicenter study indicate that dothiepin is effective in the treatment of depressive neuroses; this new agent consistently performed as well as the conventional medication amitriptyline, with a lesser incidence of adverse effects.

003573 Glass, Richard M.; Uhlenhuth, E. H.; Hartel, Frank W. Dept. of Psychiatry, University of Chicago, Chicago, IL 60637 **The effects of nabilone, a synthetic cannabinoid, on anxious human volunteers.** Psychopharmacology Bulletin. 15(2):88-90, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, the effects of nabilone, a synthetic cannabinoid, on anxious human volunteers are described. Results of a placebo controlled study of the effects of single oral doses of nabilone on selected physiological, subjective, and behavioral measures in anxious volunteers indicate a considerable amount of individual variability in subjective effects. Four anxious Ss reported decreased anxiety, while another four Ss reported no antianxiety effect. 10 references.

003574 Goldberg, Harold L. West-Ros-Park Mental Health Center, Hyde Park, MA **Buspirone -- a new antianxiety agent not chemically related to any presently marketed drugs.** Psychopharmacology Bulletin. 15(2):90-92, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, a new antianxiety agent not chemically related to any presently marketed drugs, buspirone, is described. Fifty-six psychoneurotic outpatients with a primary diagnosis of anxiety neurosis were assigned to receive either buspirone, diazepam, or placebo in a double-blind, parallel group study. Both buspirone and diazepam were significantly more effective in the reduction of anxiety; the effects of buspirone were indistinguishable from diazepam.

003575 Levine, Sidney. Oldham and District General Hospital, Oldham, Lancashire, England **A controlled comparative trial of a new antidepressant, ciclazindol.** Journal of International Medical Research (Northampton). 7(1):1-6, 1979.

A controlled, double-blind comparative trial of a new tetracyclic compound, ciclazindol (WY 23409), against amitriptyline in the treatment of 35 patients admitted to hospital with depressive illness is described. Each patient was randomly allocated to 3 weeks treatment with either 50mg b.d. ciclazindol or 50mg b.d. amitriptyline. In the event of a poor response, the dose level was raised to 75mg b.d. Separation of cases of endogenous depression and severity of depression were assessed by the Levine-Pilowsky Depression Questionnaire, a self-rating technique. Severity of depression was also assessed using the Hamilton Rating Scale. No significant difference was noted between the drugs in either the degree or the rate of response or when he endogenous cases alone were studied. It was observed that only one third of ciclazindol patients gained weight compared to almost three quarters of the amitriptyline group, and the mean weight gain of the latter was over double that of the ciclazindol group. It is concluded that ciclazindol offers promise and merits further study using higher dosage levels once its full safety trials have been completed. 10 references. (Author abstract)

003576 Lieberman, Abraham N.; Gopinathan, Govindan; Estey, Eli; Kupersmith, Mark; Goodgold, Albert; Goldstein, Menek. Dept. of Neurology, New York University Medical Center, 566 First Avenue, New York, NY 10016 **Lergotrile in Parkinson disease: further studies.** Neurology. 29(2):267-272, 1979.

A clinical trial of lergotrile in 53 patients with advanced Parkinson disease (PD) who had increasing disability despite optimal treatment with levodopa/carbidopa (Sinemet) is described. Results indicate that lergotrile has a definite antiparkinsonian effect, but that the incidence of adverse effects, particularly hepatotoxicity, makes it unlikely that this ergot alkaloid will become widely available for treatment of PD. 33 references. (Author abstract modified)

003577 Takahashi, Ryo; Sakuma, Akira; Hara, Toshio; Kazamatsuri, Hajime; Mori, Atsuyoshi; Saito, Yoichi; Murasaki, Mitsukuni; Oguchi, Toru. Department of Neurospsychiatry, Nagasaki University School of Medicine, Sakamoto-machi 7-1, Nagasaki 852, Japan **Comparison of efficacy of amoxapine and imipramine in a multi-clinic double-blind study using the WHO schedule for a standard assessment of patients with depressive disorders.** Journal of International Medical Research (Northampton). 7(1):7-18, 1979.

A multiclinic double-blind controlled study on amoxapine, a new antidepressive agent, in comparison with imipramine, using the WHO Schedule for a Standard Assessment of Patients with Depressive Disorders, was performed with 111 patients. The assessment of severity of illness and overall improvement indicates clearly the superiority of the antidepressive effect of amoxapine to that of imipramine. The onset of antidepressive effect of amoxapine was more rapid than that of imipramine, and in more than half of the patients in the amoxapine group, the improvement was seen within 4 days following the drug administration. Amoxapine was superior to imipramine in terms of safety and usefulness. The side-effects due to amoxapine appeared less frequently and were less serious than with imipramine. The differences between amoxapine and imipramine was especially remarkable for hypotensive effect. It is concluded that the antidepressive effect of amoxapine is superior to that of imipramine for almost all symptoms and signs. Amoxapine displayed an especially remarkable effect on psychomotor retardation, depres-

sive feeling, anxiety and tension, somatic complaints, and sleep disturbance. 19 references. (Author abstract)

08 DRUG TRIALS IN SCHIZOPHRENIA

003578 Abrams, Richard; Taylor, Michael Alan. Dept. of Psychiatry and Behavioral Sciences, University of Health Sciences/Chicago Medical School, Building 50, North Chicago, IL 60064 **EEG observations during combined lithium and neuroleptic treatment.** American Journal of Psychiatry. 136(3):336-337, 1979.

The EEG effect of combined lithium and neuroleptic treatment were investigated in 131 adult acute treatment psychiatric patients. The combination of lithium and haloperidol produced no more EEG abnormalities than either drug given alone or than no drug at all. The findings fail to support the need for EEG monitoring of such treatment. The possibility of anticholinergic delirious states in combined lithium and thioridazine treatment is discussed. 4 references.

003579 Alexander, Paul E.; Van Kammen, Daniel P.; Bunney, William E., Jr. Intensive Treatment Unit, Butler Hospital, 345 Blackstone Blvd., Providence, RI 02906 **Antipsychotic effects of lithium in schizophrenia.** American Journal of Psychiatry. 136(3):283-287, 1979.

The lithium carbonate therapy of 13 schizophrenic patients was evaluated in a placebo controlled, double-blind, 3 week study. Seven of the 13 patients were less psychotic while receiving lithium; four of these seven patients relapsed after lithium withdrawal. Patients who improved during the 3rd week on lithium could be differentiated from nonresponders on the basis of their improvement during the 1st week. Clinical factors such as diagnosis, prognosis, and symptoms failed to predict responders from nonresponders. 37 references. (Author abstract modified)

003580 Bataille, M. Clinique Notre-Dame des Anges, Rue E. Vandervelde 67, B 4301 Glain, Belgium **Preliminary note on the antipsychotic efficacy of bromperidol.** Acta Psychiatrica Belgica (Bruxelles). 78(1):173-179, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, a study of bromperidol in 20 acute and chronic psychotic inpatients is reported. Subjects received a mean daily dose of 10 to 18mg for a 6 to 8 week period. In 13 patients, bromperidol was substituted for haloperidol; an 7 it was given immediately after the washout period. According to a preliminary analysis of descriptive and psychometric data, bromperidol seems to be a potent antipsychotic drug without disturbing adrenolytic side-effects or sedation, with classical extrapyramidal effects of the hypertonia type. (Author abstract modified)

003581 Bigelow, Llewellyn B.; Walls, Philip; Gillin, J. Christian; Wyatt, Richard Jed. Laboratory of Clinical Psychopharmacology, Intramural Research Program, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Clinical effects of L-5-hydroxytryptophan administration in chronic schizophrenic patients.** Biological Psychiatry. 14(1):53-67, 1979.

L-5-hydroxytryptophan (L-5HTP) and the peripheral decarboxylase inhibitor, carbidopa, were administered to chronic schizophrenic inpatients in three experiments using a double-blind, placebo controlled crossover design. Experiments included: 1) L-5HTP administration to 15 subjects withdrawn from all neuroleptic medication; 2) administration to seven patients maintained on haloperidol; and 3) administration to nine patients maintained on chlorpromazine. Although the groups were diagnostically homogeneous, individual responses were highly variable. Considering each group as a whole, the only significant changes in rated psychosis were an increase in the first group consequent to withdrawal of neuroleptics, and an increase associated with adding L-5HTP to chlorpromazine. Neuroleptics appeared to sensitize the central nervous system to the effects of L-5HTP loading. Acute exacerbations of psychosis induced by L-5HTP would be reversed by neuroleptics. Results do not support the hypothesis that schizophrenic illnesses arise as a consequence of a deficit in serotonergic function which can be treated with administration of a serotonergic precursor. 44 references. (Author abstract modified)

003582 Bjerkenstedt, Lars; Harnryd, Christer; Grimm, Veronika; Gullberg, Bo; Sedvall, Goran. Laboratory of Experimental Psychiatry, Dept. of Psychiatry, Karolinska Institute, S-10401 Stockholm, Sweden **A double-blind comparison of melperone and thiothixene in psychotic women using a new rating scale, the CPRS.** Archiv fur Psychiatrie und Nervenkrankheiten. 226(3):157-172, 1978.

A double-blind study of the clinical effects of melperone and thiothixene, which employed 81 schizophrenic and paranoid women as Ss, and which employed a new rating scale, the Comprehenisve Psychopathology Rating Scale (CPRS), is described. The antipsychotic effect was evaluated by clinical rating using the CPRS and the nurses rating scale (NOSIE 30) before and after 2 and 4 weeks of drug treatment. Treatment with both drugs was associated with significant reductions in morbidity, as estimated by several measures of therapeutic effect from the CPRS, by the NOSIE scale and by global ratings. There were more extrapyramidal side-effects in the thiothixene group than in the melperone treated patients. Results support the use and further evaluation of melperone in the treatment of psychotic patients. 36 references. (Author abstract modified)

003583 Borison, Richard L.; Havdala, Henri S.; Diamond, Bruce I. Mt. Sinai Hospital, Chicago, IL **Brain norepinephrine, dopamine and schizophrenia.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 154-155).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The underlying biochemical pathology in schizophrenia, especially the role played by norepinephrine, is discussed. In an attempt to understand the neurochemical processes in schizophrenia, the pharmacology of three different agents whose administrations have been proposed as animal models for schizophrenia were compared. These agents are cocaine, amphetamine, and phenylthylamine. All three agents used to induce stereotyped behavior in animals exert their behavioral effects by potentiating both brain dopamine and norepinephrine mechanisms. These facts, coupled with the evidence that drugs with agonist properties on both norepinephrine and dopamine receptors are capable of producing schizophreniform psychoses in man, and that norepinephrine blockers have been successfully used in treating schizophrenia, suggest that it may be naive to assume that schizophrenia involves only a biochemical lesion in brain dopamine systems. 2 references. (Journal abstract modified)

003584 Brasseur, R. Rue E. Picard 27-27a, B-1180 Brussels, Belgium **Clinical trial with bromperidol in psychotic states.** Acta Psychiatrica Belgica (Bruxelles). 78(1):110-117, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, results of a clinical trial of bromperidol in psychotic states are reported. Subjects were 15 psychiatric inpatints, predominantly schizophrenics. Results indicate that this neuroleptic possesses potent antipsychotic properties. Its antimanic activity was, how-

ever, not pronounced. It is therefore not indicated in states of agitation requiring heavy and immediate sedation. Side-effects were mostly of the extrapyramidal type, generally mild and easily controlled by antiparkinson medications. Bromperidol given in a single daily dose is well accepted by patients and is therefore a valuable addition to neuroleptic therapy. Its stimulating properties in activity, concentration, and socioprofessional adaptation make it particularly appropriate for readaptation programs. 1 reference. (Author abstract modified)

003585 Crane, George E. University of North Dakota, Grand Forks, ND 58201 **Schizophrenic deterioration and neuroleptic drug use.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 177).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. A survey of a representative sample of long-term hospitalized patients, including 275 schizophrenia patients who had received extensive treatment with neuroleptic drugs, to measure mental deterioration is reported. Severe mental deterioration was present in about one third of the sample; it was absent or only moderate in patients hospitalized for fewer than 5 years, observed in 18% of those hospitalized from 6 to 25 years, and observed in more than 40% of those hospitalized more than 25 years. It is concluded that the use of neuroleptic agents plus the hospital care provided by an average hospital do not prevent severe mental deterioration in a substantial minority of schizophrenics. (Journal abstract modified)

003586 Fleischhauer, J. Psychiatrische Landeskrankenhaus, Akademische Klinik der Universitat Ulm, D-798 Ravensburg-Weissenau, Germany **Treatment of female schizophrenic patients with bromperidol, a new neuroleptic drug of the butyrophenone group with medium duration of action.** Acta Psychiatrica Belgica (Bruxelles). 78(1):118-128, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, results of an evaluation of bromperidol in schizophrenic female inpatients are reported. Bromperidol had a safe antipsychotic effect. Latency was short, with some effect apparent by the 3rd treatment day and definite effects on the 7th treatment day. The drug was also found to have slight sedative properties, an anxiolytic effect, and evident influence on the processes of social reintegration. The sedative effect was not sufficient in severe psychomotor agitation. The clinical effect was safe for 24 hours. Due to the small doses (3 to 12mg/day) required, bromperidol belongs to the high potency group of neuroleptics and qualifies for long-term treatment of schizophrenic psychoses. Extrapyramidal side-effects are easily corrected by an anticholinergic drug. 7 references. (Author abstract modified)

003587 Gardner, E. Health Care Consultants, Suite 223, 4600 Connecticut Avenue, NW, Washington, DC 20008 **The initial U.S. clinical experience in the management of schizophrenic patients with bromperidol.** Acta Psychiatrica Belgica (Bruxelles). 78(1):134-146, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, the initial U.S. experience with bromperidol in 30 acute and chronic schizophrenics is reported. In a month long inpatient study, acute patients were administered a single dose of 3 to 39mg (overall 14 to 23mg) per day. Pretreatment versus 4 week treatment indicated significant improvement in five behavioral clusters, and two thirds of the patients were much to very much improved based on global clinical ratings. Minimal side-effects were noted; in particular, fewer acute neuromuscular disorders and less weight gain was seen. Based on experience to date, bromperidol will be a significant addition to the therapeutic armamentarium for the management of acute and chronic schizophrenia. (Author of abstract modified)

003588 Gelenberg, Alan J.; Doller, Joanne C. Dept. of Psychiatry, Massachusetts General Hospital, Boston, MA 02114 **Clozapine versus chlorpromazine for the treatment of schizophrenia: preliminary results from a double-blind study.** Journal of Clinical Psychiatry. 40(5):238-240, 1979.

A double-blind comparison of clozapine and chlorpromazine, involving 15 schizophrenic inpatients, is presented. Chlozapine appeared to be at least as effective as chlorpromazine in reducing psychotic effects, and did not produce any extrapyramidal reactions. Reports of bone marrow toxicity associated with clozapine have led to the withdrawal of the drug from clinical use, and the premature termination of this experiment. The data presented, however, demonstrate that a drug can be an effective antipsychotic without producing neurologic reactions. 10 references. (Author abstract modified)

003589 Goldberg, Solomon C. Psychopharmacology Research Branch, NIMH, Rockville, MD 20857 **Psychotherapy versus drug outcome studies: a critical comparison.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 177-178).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Drug outcome studies are compared to studies of psychotherapy in general and to studies of schizophrenia in particular. It is pointed out that drug outcome studies have many advantages in being able to specify the amount and the duration of treatment, as well as showing effects within a very short time and having very definite effects. These methodological advantages are not shared by psychotherapy. It is concluded that there is some evidence that would lead one to believe that both are good and effective, but for doing different things, and that both can be harmful to the patient under certain circumstances. 7 references. (Journal abstract modified)

003590 Growe, Glenn A.; Crayton, John W.; Klass, David B.; Evans, Henry; Strizich, Michael. Devereux Foundation, Devon, PA 19333 **Lithium in chronic schizophrenia.** American Journal of Psychiatry 136(4A):454-455, 1979.

The effects of combining lithium with neuroleptic medication administered to a group of eight chronic schizophrenics were investigated. Six Ss fulfilled the research diagnostic criteria for schizoaffective schizophrenia. Either lithium or placebo was added to the treatment regimen in a 16 week double-blind, cross over study. Serum lithium determinations were made twice weekly. Patients were also rated biweekly on the eight manifest behavior scales of the Psychotic Inpatient Profile. Results suggest that adding lithium to a neuroleptic regimen in schizophrenic patients produces a decrease in psychotic excitement, but not in those behaviors more specifically symptomatic of schizoprenia. 10 references.

003591 Haase, H. J.; Kaumeier, S.; Schwarz, H.; Gundel, A.; Linde, O. K.; Maetz, H.; Scheel, R.; Stripf, A.; Stripf, L. Pfalzischen Nervenklinik, D-6749 Landeck, Germany **Neuroleptic potency of bromperidol.** Acta Psychiatrica Belgica (Bruxelles). 78(1):83-88, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, the neuroleptic potency of bromperidol is examined. Results of a study of the butyrophenone bromperidol in 30 schizophrenic patients indicated that: 1) bromperidol is an absolutely effective

drug with a mean optimum dose of 6mg/day, and a mean maximum dose of 11mg/day; 2) it is generally well tolerated, and when administered in a single evening dose (in one third of the cases) had positive effects on sleep, as well as beneficial neuroleptic/antpsychotic effects which permitted the reduction or elimination of other sleep inducing drugs. These relatively long lasting effects confirm the findings of previous animal studies. 4 references. (Author abstract modified)

003592 Haase, H.-J. Pfalzischen Nervenklinik, D-6749 Landeck, Germany **The purely neuroleptic effects and its relation to the ""neuroleptic threshold."** Acta Psychiatrica Belgica (Bruxelles). 78(1):19-36, 1978.

In a paper presented to the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, an investigation of the relationship between neuroleptic effectiveness and extrapyramidal symptoms is discussed together with the results of a study of 30 different short and long-term neuroleptics administered to approximately 850 schizophrenics. Fine motor extrapyramidal inhibition recognizable in handwriting samples was used an indicator of the onset of antipsychotic neuroleptic effect. Degrees of severity of inhibition using handwriting indicators were established as follows: 1 degree, the neuroleptic threshold; 2 degrees, the neuroleptic potency according to the neuroleptic threshold; 3 degrees, the neuroleptic therapeutic range; and 4 degrees, the disposition to the neuroleptic threshold dosage. (Author abstract modified)

003593 Hermans, W. Psychiatrisch Centrum, Sint-Jan-Baptist, Suikerkaai 81, B-9060 Zelzate, Belgium **Open study with bromperidol in hospitalized chronic schizophrenic patients.** Acta Psychiatrica Belgica (Bruxelles). 78(1):89-95, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, results of a study of 1 year treatment with bromperidol in 30 schizophrenic inpatients are reported. Results suggest that bromperidol is a valuable antipsychotic drug which can in most cases be successfully substituted for haloperidol. The sedating effect of the drug appeared somewhat lower than that of haloperidol, which could explain the finding that patients who had serious agitation in their anamnesis had not been sufficiently sedated. On the other hand, there are reasons for supposing that the less sedating or possibly more stimulating effect of bromperidol can be beneficial in the treatment of autistic or inhibited schizophrenics. (Author abstract modified)

003594 Hogarty, Gerard E. Dept. of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA 15251 **Aftercare treatment of schizophrenia: current status and future direction. (Unpublished paper).** Research Report, NIMH Grant MH-30750, 1978. 22 p.

Factors that precipitate or forestall relapse and that enhance or impair the personal and social adjustment of schizophrenic patients following hospital discharge are discussed using data obtained from a multiclinic investigation. A recently completed trial of depot fluphenazine and social therapy is also reviewed. The multiclinic investigation involved 374 patients assigned at intake to a form of sociotherapy designated as major role therapy. Ss were stabilized on chlorpromazine for the first 2 months and were later assigned to chlorpromazine or a placebo. They were assessed on two major outcomes: length of time in the community and community adjustment. The findings, when combined with those from the fluphenazine study, suggest a pathogenesis for certain schizophrenic disorders and a model for a more rational treatment approach. The evidence indicates the profound influence of environmental stimulation of schizophrenic course and a central core vulnerability to such stimulation among some persons. Future drug and psychological treatments should therefore involve systematic manipulation of the patient's environment. 38 references. (Author abstract modified)

003595 Horrobin, David F. Clinical Research Institute, 110 Pine Avenue West, Montreal H2W 1R7, Canada **Prostaglandin deficiency and endorphin excess in schizophrenia: the case for treatment with penicillin, zinc, and evening primrose oil.** Journal of Orthomolecular Psychiatry (Regina). 8(1):13-19, 1979.

A unified approach to the pathogenesis and treatment of schizophrenia is described. Prostaglandin deficiency and endorphin excess are linked with the excess dopamine and orthomolecular hypotheses and viewed as different complementary aspects of schizophrenia's etiology. The endorphin and prostaglandin rationales for schizophrenia are briefly described and the results of therapeutic trials of novel treatment of schizophrenia with penicillin, zinc, and evening primrose oil are reported. Partly because of its sound theoretical base and its freedom from side-effects, treatment with penicillin, evening primrose oil, and zinc promises to be a major advance. However, because this therapy is in the initial stages of experimentation, an optimal dose regime has probably not yet been achieved. 20 references.

003596 Jorgensen, Aage; Fog, Rasmus; Veilis, Bent. Dept. E, St. Hans Hospital, DK-4000 Roskilde, Denmark **Synthetic enkephalin analogue in treatment of schizophrenia.** Lancet (London). No.8122:935, 1979.

In a letter to the editor, the effectiveness of the synthetic metenkephalin analogue FK33-824 in the treatment of nine chronic psychotic inpatients, eight diagnosed as schizophrenic and one as alcoholic, is discussed Improvement was observed in five of the patients, and fewer hallucinations were reported. Side-effects were not very serious and of short duration. The results support the hypothesis of altered endorphin homeostasis in schizophrenia. 7 references.

003597 Kane, J.; Rifkin, A.; Quitkin, F. Long Island Jewish-Hillside Medical Center, New York, NY **A pilot study of ""low-dose" fluphenazine decanoate in outpatient schizophrenics.** Psychopharmacology Bulletin. 15(2):78-80, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, a pilot study of low dose fluphenazine decanoate in therapy for outpatient schizophrenics is described. Fifty-seven outpatients meeting research diagnostic criteria for schizophrenia and in remission for at least 4 weeks or at a stable clinical plateau were openly switched from standard doses of fluphenazine decanoate to doses between 1.25mg and 5mg i.m.,every 2 weeks (each patient received 1/10th of his previous dosage). Results suggest that low dose maintenance treatment may be adequate for prophylaxis in some patients, and that those who relapse may respond well to brief periods of higher dosage without significant disruption in their lives or need for rehospitalization. 9 references.

003598 Klein, Donald E. Psychiatric Research, New York State Psychiatric Institute, New York, NY **Pharmacotherapy of schizophrenia.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 176-177).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Two main questions concerning pharmacotherapy of schizophrenia are dealt with: should patients who have had only one psychotic break be treated with maintenance antipsychotics and what is the appropriate dose of maintenance antipsychotics that will optimally reduce relapse and at the same

time minimize both concurrent side-effects and long-term side-effects such as tardive dyskinesia? Recent studies in these areas are discussed. (Journal abstract modified)

003599 Kleinman, J. E.; Weinberger, D. R.; Shiling, D. J.; Rogol, A.; Mendelson, W. B.; Davis, G. C.; Wyatt, R. J. Laboratory of Clinical Psychopharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Interactions between naloxone and phenothiazines in chronic schizophrenics. (Unpublished paper).** Washington, DC NIMH, 1979, 1 p.

The possibility that inconsistent results in the testing of the endorphin hypotheses of schizophreina were related to interactions of naloxone with phenothiazines was tested by giving 15mg of naloxone or saline intravenously to 17 psychotic subjects (on and off phenothiazines) using a double-blind crossover design. It was found that naloxone causes sedation and increases in plasma prolactin concentrations and growth hormone concentrations in drug free schizophrenics. These responses to naloxone were obliterated or delayed by phenothiazines and not seen in a small sample of affective subjects. These data support the hypothesis that there are interactions between phenothiazines and naloxone in chronic schizophrenia. 6 references.

003600 Korsgaard, Soren; Skausig, Ole Bjorn. Department of Psychiatry, Municipal Hospital, Oster Farimagsgade 3, DK-1399, Copenhagen K, Denmark **Increase in weight after treatment with depot neuroleptics.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(2):139-144, 1979.

A drug trial was performed to investigate weight changes in 99 schizophrenic female patients who were treated with clopenthixol decanoate or perphenazine enanthate after prior treatment with different oral neuroleptics. A significantly higher mean weight after the oral treatment period was found and a slight, but not statistically significant, further weight increase after the following depot period. In addition, the rate of increase in weight was significantly lower during the depot treatment period. These increases might have been due to achievement of a steady state in weight during the first treatment period with oral intake. No difference was found between clopenthixol decanoate and perphenazine enanthate as regards change in weight or rate of change in weight. 8 references. (Author abstract)

003601 Malfroid, M.; Hens, L.; Roosen, P.; Dom, R. Sint-Camillus Instituut, B-3043 Bierbeek, Belgium **Double-blind evaluation of bromperidol versus haloperidol treatment in chronic psychotic patients.** Acta Psychiatrica Belgica (Bruxelles). 78(1):147-154, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, a double-blind evaluation of bromperidol versus haloperidol in 24 chronic psychotic patients is reported. Mean dose was 4mg bromperidol once daily and 4mg twice haloperidol daily. Regular evaluation was performed by BPRS, a global clinical impression, side-effects, and hematological and biochemical screening. Results suggest that bromperidol is a potent antipsychotic drug with a duration of 24 hours. Compared to haloperidol, it favors social integrtion by a mild but definite activating property. No major side-effects were observed. (Author abstract modified)

003602 Matthews, Susan M.; Roper, Margaret T.; Mosher, Loren R.; Menn, Alma Z. Center for Studies of Schizophrenia, NIMH, 5600 Fishers Lane, Rockville, MD 20857 **A non-neuroleptic treatment for schizophrenia: analysis of the two-year post-discharge risk of relapse.** Schizophrenia Bulletin. 5(2):322-333, 1979.

Data from an ongoing study comparing the 2 year postdischarge probabilities of avoiding hospital readmissions for two similar groups of young first admission schizophrenics treated in two different clinical settings are discussed. One group is receiving neuroleptic oriented treatment on the wards of a community mental health center (CMHC), and the other an intensive interpersonal approach in a small home-like facility in the community (Soteria House). The practice of the routine use of neuroleptics with this population is questioned, based on data analyzed from these two cohorts by means of a life table, a statistical technique appropriate for longitudinal studies. Data indicate that the young, relatively socially incompetent patients given maintenance neuroleptics by the CMHC program did not benefit from their use as compared to the relapse rate for the experimental group. 34 references. (Author abstract modified)

003603 Mielke, D. H.; Gallant, D. M.; Kessler, C.; Roniger, J. J.; Tam, J. N. 1415 Tulane Ave., New Orleans, LA 70112 **Haloperidol: a preliminary evaluation of a new long-acting aqueous suspension for intramuscular injection.** Current Therapeutic Research. 24(5):551-558, 1978.

A preliminary open evaluation of a new long-acting aqueous suspension of haloperidol for intramuscular injection was conducted in 20 hospitalized chronic schizophrenic patients. The study was carried out in two segments: a stabilization period of 42 days during which the patients received oral doses of haloperidol titrated to provide an optimum daily dose, and an 84 day period during which the patients received a total of six intramuscular injections of haloperidol suspension on a weekly basis. Oral doses ranged from 15 to 80mg/day and parenteral doses, based initially on the optimum oral dose and adjusted for patient response, ranged from 20 to 240mg. Mean values for psychometric measurements (BPRS, NOSIE, and global ratings) indicated that the patients improved significantly after their previous medication was abruptly changed to haloperidol, and the majority of patients remained stabilized at that level after their medication was again changed to haloperidol suspension given intramuscularly on a biweekly basis. Delayed local reactions occurred at the site of the injection in 59% of the patients, but there were no clinically significant changes in vital signs, clinical laboratory values, electrocardiograms, or ophthalmologic findings. 4 references. (Author abstract modified)

003604 Nagao, Takuo; Oshimo, Toshinori; Mitsunobu, Katsusuke; Sato, Mitsumoto; Otsuki, Saburo. Department of Neuropsychiatry, Okayama University Medical School, Okayama, Japan **CSF monoamine metabolites and cyclic nucleotides in chronic schizophrenic patients with tardive dyskinesia.** Neurochemical Research. 3(5):654, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. Levels of homovanillic acid (HVA), 3-methoxy-4-hydroxyphenylglycol (MHPG), 5-hydroxyindoleacetic acid (5-HIAA), cyclic adenosine monophsohpate (cAMP), and cyclic guanosine monophosphate (cGMP) were measured in the lumbar cerebrospinal fluid (CSF) of 13 chronic schizophrenic patients with tardive dyskinesia (TD), before and after 3 week treatment with di-n-propylacetic acid (DPA) or cyproheptadine. Improvement was seen in three of seven patients treated with DPA and two of six treated with cyproheptadine. HVA levels were significantly decreased, while CAMP and cGMP levels were increased, during the administration of either drug. MHPG levels declined during treatment with cyproheptadine, but not with DPA. There were no significant correlations between the degree of improvement in TD and the change in amine metabolites or cyclic nucleotides. None of the pretreatment values for CSF amine metabolites or cyclic nucleotides differed from those of 15 control chronic schizophrenics with-

out TD. Studies of 5 chronic schizophrenics with parkinsonian tremor revealed 5-HIAA levels lower than those of controls.

003605 Pempkowiak, Leszek; Januszkiewicz-Grabiasowa, Aloiza; Gora, Stanislaw. Klinika Chorob Psychicznych AM, Debinki 25, 80-211 Gdansk, Poland **/Studies of the concentration of long-acting fluphenazine in the blood plasma of patients with various forms of schizophrenia./** Badania stezenia flufenazyny o przedluzonym dzialaniu w osoczu u chorych z roznymi postaciami schizofrenii. Psychiatria Polska (Warszawa). 13(1):1-8, 1979.

Concentration of hydrogen chloride of fluphenazine in the blood serum of schizophrenic patients was studied. Ss were 25 patients (23 males and 2 females 17 to 54 years old). The patients received no medication for at least 8 days before they were given (intramuscularly) an injection of 25mg of fluphenazine caprate (Mirenil prolongatum). Fourteen of the Ss had never been treated by psychotropic drugs before. Concentration of hydrogen chloride of fluophenazine in the blood plasma was determined by the fluorometric method. Mirenil prolongatum was found to be a long-acting drug. No linear correlation was found between the mental state of the patient, evaluated by using the overall scale, and the concentration of fluphenazine in blood plasma. Data from the literature, indicating that the level of the equivalent of the foreign Mirenil prolongatum is three times higher in the corresponding time intervals, call for verification to determine whether this is due to the research method used. 15 references. (Journal abstract modified)

003606 Perez-Cruet, J.; Waite, J. G.; Mehta, S. Missouri Institute of Psychiatry, University of Missouri-Columbia School of Medicine, St. Louis, MO **Pharmacokinetics of fluphenazine decanoate.** Clinical Pharmacology and Therapeutics. 25(2):241, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. A new fluorometric method was used to measure fluphenazine plasma levels in 8 schizophrenic patients 1, 2, 3, 5, 7, 9, 11, and 14 days after depot intramuscular injection of fluphenazine decanoate. Results indicated slow and variable release of fluphenazine from the depot site. Patients showed plasma drug peaks as early as 3 days or as late as 11 days after injection. No relationships between plasma levels of homovanillic acid and fluphenazine were observed. (Author abstract modified)

003607 Poldinger, W. Cantonal Psychiatric Clinic, CH-9500 Wil, Switzerland **/Clinical effects of bromperidol./** Clinical experiences in an open and a double-blind trial. Acta Psychiatrica Belgica (Bruxelles). 78(1):96-101, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, the clinical effects of bromoperidol are reported. In a 4 week open study of 20 schizophrenic inpatients, daily mean dose at the end of trial was 4.47mg administered once daily. Of 19 patients completing the trial, 18 showed very good or good therapeutic effect, with nine patients exhibitng mild to moderate extrapyramidial reactions. Laboratory tests and evaluation of various quantitative and qualitative tolerability parameters were not indicative of toxic effects. In a double-blind study with haloperidol in 40 schizophrenic inpatients, both drugs were found highly effective in the treatment of psychotic syndromes belonging predominantly to the schizophrenic group. Findings also suggested a certain superiority of bromperidol, particularly in onset of action. No differences were observed with respect to side-effects and general tolerability. (Author abstract modified)

003608 Prusoff, Brigitte A.; Williams, Donald H.; Weissman, Myrna M.; Astrachan, Boris M. Dept. of Psychiatry, Yale University School of Medicine, New Haven, CT 06520 **A controlled clinical trial of amitriptyline added to perphenazine in the treatment of depressed schizophrenics.** Psychopharmacology Bulletin. 15(2):80-81, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, a controlled clinical trial of amitriptyline added to perphenazine in the treatment of depressed schizophrenics is described. Results of a double-blind, randomized, placebo controlled clinical trial, designed to evaluate the combination of perphenazine and amitriptyline with that of perphenazine alone in the treatment of 35 ambulatory chronic schizophrenic patients with depressive symptoms, indicate that the addition of amitriptyline to perphenazine was effective in reducing depressive symptoms on the Raskin Depression Scale at 4 months of treatment. However, patients receiving amitriptyline reported more thought disorders. 14 references.

003609 Rifkin, Arthur; Quitkin, Frederic; Kane, John; Klein, Donald F.; Ross, Donald. College of Physicians and Surgeons, Columbia University, New York, NY 10032 **The effect of fluphenazine upon social and vocational functioning in remitted schizophrenics.** Biological Psychiatry. 14(3):499-508, 1979.

Thirty-six remitted schizophrenics who participated in an outpatient study of fluphenazine decanoate or oral fluphenazine versus placebo given for a year were examined for the effect of drug treatment upon social and vocational functioning. Only the period prior to any clinical relapse was evaluated. No difference was found between those on drug or placebo. It is concluded that antipsychotic drugs, at least in the context of an aftercare clinic offering a rich spectrum of nonpharmacological services, and when combined with antiparkinson medication, do not interfere with social and vocational functioning. 15 references. (Author abstract)

003610 Roberts, Eugene; Amacher, Peter. no address **Propranolol and schizophrenia.** New York, Alan R. Liss, 1978. 152 p. $15.00.

A collection of papers on the use of propranolol in the treatment of schizophrenia is presented. Clinical reports of the efficacy of propranolol in the control of schizophrenic symptoms are included. While results have been positive, in some cases, a false remission has occurred followed by a relapse. The results of a small controlled study are reported. The cerebral effects of propranolol, and effects on neural metabolism and blood flow are described.

003611 Rosenblatt, J. R.; Wagner, R.; DeLisi, L.; Bigelow, L. B.; Shiling, D.; Wise, D.; Shore, D.; Wyatt, R. J. Laboratory of Clinical Psychopharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Serum neuroleptic level measured by radioreceptor assay: concurrent assessment of clinical response in chronic schizophrenic patients. (Unpublished paper).** Washington, DC, NIMH, 1979. 1 p.

Serum neuroleptic levels were measured weekly in 10 chronic schizophrenic patients for up to 3 months by a sensitive radioreceptor assay which simultaneously detects neuroleptic parent compounds and their active metabolites. A curvilinear relationship was found between serum neuroleptic level and clinical response, with patients attaining optimal improvement at serum levels ranging between 50ng/ml and 300ng/ml chlorpromazine equivalents. clinical ratings at serum levels within this range were significantly different from clinical ratings of patients with neuroleptic levels below 50ng/ml and above 300ng/ml chlorpromazine equivalents. The findings indicate that a ""therapeu-

tic" wondor may exist for neuroleptic serum level in schizophrenic patients. (Author abstract)

003612 Schooler, Nina R.; Levine, Jerome; Severe, Joanne B. Psychopharmacology Research Branch, NIMH, Rockville, MD 20857 **Depot fluphenazine in the prevention of relapse in schizophrenia: evaluation of a treatment regimen.** Psychopharmacology Bulletin. 15(2):44-47, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, a study of the relative effectiveness of oral medication and long acting injectible phenothiazine in preventing relapse in schizophrenic patients newly discharged to the community is described. Two hundred fourteen schizophrenics who had been randomly assigned to fluphenazine decanoate or fluphenazine hydrochloride while floridly ill and hospitalized were seen every 3 weeks for double-blind drug administration for 1 year or until clinical relapse. No significant differences in rate of relapse were found between the two regimens.

003613 Sheppard, Graham P. M.R.C. Neurochemical Pharmacology Unit, Dept. of Pharmacology, Med. School, New Addenbrookes Hosp., Hills Rd., Cambridge CB2 2QD, England **High-dose propranolol in schizophrenia.** British Journal of Psychiatry (London). 134(May):470-476, 1979.

The effects of high dosages of propanolol in schizophrenia were investigated. Eight male schizophrenics were treated in an open study with propranolol. The dose was increased by 160mg/day until a maximum of 2,400mg/day was achieved on day 15 and remained constant until day 21. Seven patients showed significant clinical evidence of psychiatric improvement, while the incidence of toxic side-effects was low. There was a wide interpatinet variation in plasma levels of propranolol. Despite a significant increase of plasma propranolol between day 15 and day 21, there was not significant change in serum prolactin. 28 references. (Author abstract modified)

003614 Shopsin, Baron; Klein, Helmfried; Aaronsom, Michele; Collora, Maria. Neuropsychopharmacology Research Unit, Dept. of Psychiatry, New York University School of Medicine, New York, NY 10016 **Clozapine, chlorpromazine, and placebo in newly hospitalized, acutely schizophrenic patients: a controlled, double-blind comparison.** Archives of General Psychiatry. 36(6):657-664, 1979.

In a controlled double-blind comparison, 31 newly admitted acutely psychotic schizophrenic patients were administered clozapine, chlorpromazine, or placebo for a 5 week medication period. Data suggested that clozapine, in the doses employed (maximum dose 900mg), was more effective in overall improvement response, discharge rate, and an amelioration of discrete symptoms across the different objective rating scales used, than was chlorpromazine hydrochloride. Placebo was ineffective. Unlike chlorpromazine, no extrapyramidal reactions occurred in patients ingesting clozapine. Clozapine was also beneficial in reversing abnormal involuntary motor movements. It was an excellent anxiolytic and hypnotic agent. Sedation, hypotension, and hypersalivation were among the more common side-effects observed. 42 references. (Author abstract modified)

003615 Singh, Man Mohan; Kay, Stanley R. University of Tennessee Center for the Health Sciences, Schizophrenia Program, VA Hospital, Memphis, TN **Dysphoric response to neuroleptic treatment in schizophrenia: its relationship to autonomic arousal and prognosis.** Biological Psychiatry. 14(2):277-294, 1979.

Longitudinal pharmacotherapeutic data from 58 schizophrenic patients is reported which suggests that the emergence of a dysphoric state, characterized by a combination of anxiety, depression, and accusatoriness, early in the course of neuroleptic treatment augurs poor therapeutic outcome and is associated with an unfavorable prognostic classification and a tendency for autonomic arousal to increase with treatment from a drug free base line somewhat higher than normal. These associations particularly characterized the nonparanoid schizophrenics with nuclear prognostic classification and poor short-term as well as long-term therapeutic outcome; they did not apply to paranoids. The dysphoric response is unrelated to base line dysphoria or to the extrapyramidal reactions to neuroleptic medication, and seems to reflect some basic biological differences between the poor prognosis nonparanoid, the good prognosis nonparanoid, and the paranoid schizophrenics. 37 references. (Author abstract)

003616 Tanaka, Kiyoshi; Kashiwagi, Toru; Tanaka, Yuzo; Nakasawa, Kazuyoshi; Kuda, Kenji; Yogi, Hideaki. Tottori-Byoin National Sanatorium, Tottori, Japan **Clinical evaluation of nitrazepam added to psychotropics on insomnia in schizophrenic patients.** Iryo (Therapeutics) (Toyko). 33(2):143-150, 1979.

The hypnotic effect of nitrazepam on 33 schizophrenic inpatients treated with psychotropics was examined in a double-blind controlled study. The effects of the hypnotics were evaluated from the subjective complaints of the patients. In 16 of the patients, a difference was observed between control and the test drug, and in 15 of them nitrazepam was more effective than placebo. But in the remaining patients, no difference was observed. In various kinds of factors, it appeared that only the length of hospitalization was related to the effect of nitrazepam. It is concluded that there may be a placebo effect for 1 or 2 days. 11 references. (Journal abstract modified)

003617 Toyoda, Junzo. Musashi National Sanatorium, Tokyo, Japan **Changes in the frequencies of schizophrenic symptoms with the introduction of antipsychotic drugs: on the female in-patients.** Japanese Journal of the National Medical Services. 32(4):467-474, 1978.

The effects of antipsychotic drug therapy on the schizophrenic symtomatology of 110 female inpatients were investigated. Data were obtained from a review of clinical records of patients discharged either before or after the introduction of drug therapy. In the cases receiving antipsychotic therapy, rapport disturbances, abulia, mutism, grimacing, and monologuing were diminished and poor self-inhibition and mood disturbances were increased. Patients with a good prognosis showed more mood disturbances and catathymic experiences after drug therapy than did patients with a poor prognosis. It is suggested that the increases in some symptoms may be a direct effect of the antipsychotic drugs. 20 references. (Journal abstract modified)

003618 Versiani, M.; Da Silva, J. A. R.; Frota, L. H.; Mundim, F. D. R. Gonzaga Bastos 181, ZC 11, Rio De Janeiro, Brazil **Double-blind comparison between loxapine and haloperidol in the treatment of adolescent schizophrenic patients.** Current Therapeutic Research. 24(5):559-566, 1978.

Fifty adolescent schizophrenic patients were treated with loxapine or haloperidol for 4 weeks on a double-blind basis. Mean daily dosage was 70.4mg for loxapine and 7.6mg for haloperidol. Statistically significant changes across time were detected for the following items of the Brief Psychiatric Rating Scale: anxiety, conceptual disorganization, suspiciousness, hallucinatory behavior, and unusual thought content. Statistically significant improvement was also detected for all factors of the Nurses Observation Scale for Inpatient Evaluation. Few significant differences arose from between group comparisons. Extrapyramidal signs like tremors were more frequent in the haloperidol group, while sleepiness predominated in the loxapine group. These re-

sults are in agreement with those of two investigations carried out with similar methods. It is concluded that loxapine is comparable to haloperidol regarding efficacy and tolerance in the treatment of adolescent schizophrenic patients. 4 references. (Author abstract)

003619 Weiser, G. Niedernharterstrasse 10, A-4020 Linz-Urfahr, Austria **Results of a clinical trial with bromperidol C-C 2489/21.** Acta Psychiatrica Belgica (Bruxelles). 78(1):102-109, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium November 1977, results of a clinical trial of bromperidol are reported. Subjects were 30 male schizophrenic inpatients of varying diagnostic subtypes. The controlled trial lasted over an 8 week period. Global improvement from very much improved to moderately improved was achieved in 76% of the patients; two patients dropped out of the study. Optimal dosage appeared to be between 4 and 6mg/day. Adverse effects were confined to moderate extrapyramidal symptoms in the higher dose range. Results indicate that bromperidol is a potent long acting neuroleptic drug without essential psychomotor damping, anxiolytic, or hypnosedating properties, but with a strong antipsychotic potential against basic schizophrenic disintegration. It is mainly indicated in paranoia, depression, and simple forms of schizophrenia. (Author abstract modified)

003620 Woggon, B. Psychiatrische Universitatsklinik, Postfach 68, CH-8029 Zurich 8, Switzerland **Effects and side-effects of bromperidol in comparison with other antipsychotic drugs.** Acta Psychiatrica Belgica (Bruxelles). 78(1):155-172, 1978.

In a paper presented at the International Symposium on Bromperidol held in Bruges, Belgium, November 1977, a comparative study of bromperidol and other antipsychotic drugs in 25 schizophrenic inpatients is reported. Patients were treated up to 30 days, and bromperidol dosage was increased depending on side-effects and effects up to 5mg/day. Bromperidol showed a good effect on productive schizophrenic symptoms and caused a significant reduction in accompanying depressive symptoms. Data from this trial were compared with data from two open trials of clozapine and haloperidol performed using the same methods. This comparison indicated similar side-effects but a different severity of extrapyramidal side-effects. A double-blind comparison of bromperidol and perphenazine in 40 schizophrenics showed a stronger antipsychotic efficacy of bromperidol and an earlier onset of effects. 14 references. (Author abstract modified)

09 DRUG TRIALS IN AFFECTIVE DISORDERS

003621 Aberg, A.; Holmberg, G. Psychiatric Unit, Danderyd Hospital, S-182 03 Danderyd, Sweden **Preliminary clinical test of zimelidine (H 102/09), a new 5-HT uptake inhibitor.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(1):45-58, 1979.

Zimelidine, a bicyclic antidepressive compound from Sweden which in animal experiments causes specific inhibition of the uptake of 5-HT, was tried on 15 patients with endogenous depression. Depressive symptoms were effectively relieved or entirely abolished in about two thirds of the patients. Only four patients did not react to the drug, and these were probably in need of NA uptake inhibitors. Their symptoms while taking the drug suggest the true existence of depressive cases in need of an NA uptake inhibitor, but completely resistant to a specific 5-HT uptake inhibitor. The final dose of zimelidine, 75mg b.i.d.,although sufficient in most cases, is reported to be somewhat low for a few patients. A general dosage of 100mg b.i.d. is recommended to achieve a minimum level of 250nmol/1 blood plasma concentration of zimelidine. 9 references. (Author abstract modified)

003622 Allen, Robert E.; Pitts, Ferris N., Jr. 1934 Hospital Place, Los Angeles, CA 90033 **Drug modification of ECT: methohexital and diazepam.** Biological Psychiatry. 14(1):69-76, 1979.

A systematic comparison of methohexital and diazepam as anesthetics in the drug modification of electroconvulsive therapy (ECT) was conducted by holding atropinization, succinylcholinedepolarizing blockade, and resuscitation constant while monitoring four ECTs in each of 24 affective patients. Each patient served as his own control and two dosages of each drug were given to each patint in all possible orderings. The results were highly significant and methohexital was clearly superior. Nine of 48 (19%) EKGs were abnormal postECT with methohexital as compared to 29 of 48 (60%) with diazepam. Significantly more atrial premature contractions, ventricular premature contractions (VCPs), multifocal VPCs, ST segment changes, bradycardias, etc. occurred after diazepam. Methohexital induction was also clinically superior: there was little of the reduction restlessness and none of the postECT recollection of frightening apnea seen with diazepam. 11 references. (Author abstract modified)

003623 Amsterdam, Jay; Brunswick, David J.; Mendels, Joseph. Veterans Administration Hospital, 151-E, University and Woodland Avenues, Philadelphia, PA 19104 **High dose desipramine, plasma drug levels and clinical response.** Journal of Clinical Psychiatry. 40(3):141-143, 1979.

The relationships among high dose tricyclic antidepressants (including desipramine), plasma drug levels, and clinical response are discussed in relation to a case report. It is contended that the concentration of tricyclic antidepressants in plasma may be a more important factor than the oral dose in determining whether or not a patient will respond to treatment. Knowledge of the drug dose/response course and its levels in blood may enable the physician to convert a patient from a nonresponder into a responder. 14 references. (Author abstract modified)

003624 Appelbaum, Paul S.; Vasile, Russell G.; Orsulak, Paul J.; Schildkraut, Joseph J. Harvard Medical School, Boston, MA 02115 **Clinical utility of tricyclic antidepressant blood levels: a case report.** American Journal of Psychiatry. 136(3):339-341, 1979.

A case report is presented of toxic levels of imipramine in an elderly female patient in which the clinical utility of tricyclic antidepressant blood levels is illustrated. In the absence of the determination of plasma tricyclic antidepressant levels in this patient, neither clinical psychiatric evaluation nor physical examination could have led to the proper psychopharmacologic response. The apparent decrease in the patient's tolerance for tricyclic antidepressants as she aged emphasizes the need for caution in prescribing for geriatric patients. An additional factor in the attainment of toxic levels in this case may have been the concomitant administration of acetophenazine. 7 references.

003625 Avery, David; Lubrano, Aldo. Lubrano: Stanford University School of Medicine, Palo Alto V.A. Hospital, Palo Alto, CA 94304 **Depression treated with imipramine and ECT: the DeCarolis study reconsidered.** American Journal of Psychiatry. 136(4B):559-562, 1979.

The DeCarolis study, a large, prospective, Italian study (N=437) that compared high dose imipramine with electroconvulsive therapy (ECT) in the treatment of depression, is reevaluated. Noting that the only English language presentation of the study has been a short ""Excerpta Medica" summary which emphasized the efficacy of imipramine, the original data is pre-

sented and interpreted. The superiority of ECT is evident among patients with endogenous depression, and especially evident among those with delusional depression (83% improved with ECT versus 40% with imipramine) and depressions defined as severe (83% versus 35%). 29 references. (Author abstract modified)

003626 Callan, John. no address **Is affective illness on the increase?** Journal of the American Medical Association. 241(6):545, 1979.

Proceedings of a seminar on the Biology and Psychopharmacology of Depression, held in Tarpon Springs, FL, are briefly summarized. Incidence and prevalence rates of affective illness in the United States were discussed, and predisposing factors, diagnosis, and prognosis were examined. Pharmacologic rationales for the treatment of depression and the possible mechanisms of action of antidepressant drugs were also reviewed. The biogenic amine hypothesis of depression was discussed, and directions for future research, particularly in the area of psychopharmacology, were presented.

003627 Carman, John Scott; Wyatt, Richard J. Laboratory of Clinical Psychopharmacology, William A. White Bldg., St. Elizabeths Hospital, Washington, DC 20032 **Calcium: pace-setting the periodic psychoses.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 210-211).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The abrupt shifts in calcium metabolism which occur in phase with periodic disorders of mood and thinking are reported, along with the effects of calcium active agents on psychotic agitation or mania. It is hypothesized that the serum calcium increases trigger the onset of agitated episodes by provoking such opposite changes in cerebrospinal fluid. Behavioral and biochemical effects of double-blind trials in psychotic inpatients of pharmacologic manipulations that mimic or mitigate the described increases in serum calcium and phosphorus are summarized. Data support the hypothesis that the observed abrupt increases in serum calcium and phosphorus might cause the opposite CSF calcium shifts, the behavioral agitation, and the increases in serum CPK frequently noted during acute psychosis. 2 references. (Journal abstract modified)

003628 Carman, John Scott; Wyatt, Richard Jed. Dept. of Psychiatry, University of Alabama in Birmingham, School of Medicine, Birmingham, AL **Calcium: bivalent cation in the bivalent psychoses.** Biological Psychiatry. 14(2):295-336, 1979.

Data demonstrating that reductions in cerebral spinal fluid (CSF) calcium consistently accompany mood elevation or motor activation, whether iatrogenic or spontaneous, is presented and reviewed. A modest oral calcium lactate supplement seemed to slightly intensify agitation in six patients. Dihydrotachysterol (DHT), an analogue of Vitamin D which more exactly mimics the increase in both serum calcium and phosphorus, appeared in at least one periodically psychotic patient to trigger an opposite shift in CSF calcium. In eight patients, manic symptomatology appeared de novo or grew significantly and substantially worse during 2 to 6 weeks of oral DHT administration. On the other hand, in 12 patients, subcutaneous injections of synthetic salmon calcitonin (SCT) decreased serum calcium and phosphorus, increased CSF calcium, and decreased agitation while augmenting depressive symptomatology. It is reported that SCT also decreased quantified motor activity, frequency and severity of periodic agitated episodes, serum CPK, and prolactin, and nocturnal sleep, while DHT or calcium lactate had opposite effects on the same parameters. 152 references. (Author abstract modified)

003629 Chang, S. S.; Pandey, G. N.; Dysken, M.; Schaffer, C.; Davis, J. M. Illinois State Psychiatric Institute, Chicago, IL **Predicting the optimal lithium dosage: a prospective study.** Clinical Pharmacology and Therapeutics. 25(2):217, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. A formula for predicting the optimal lithium dosage on the basis of 12 or 25 hour plasma lithium levels after a testing dose of 900mg lithium was used to predict the doses needed to reach steady state plasma lithium of 1.0mEq/L in 10 patients, while doses were adjusted by the conventional trial and error method in a second patient group. At the end of 2 weeks, the plasma lithium levels in the first group ranged from 0.76 to 1.23mEq/L, while those in the second group ranged from 0.51 to 1.65mEq/L. Significantly more overshooting and undershooting was observed during the course of dose adjustment by the conventional method than by the predictive formula. It is concluded that the predictive method can provide safer and more accurate lithium dose adjustment. 1 reference. (Author abstract modified)

003630 Chouinard, G.; Young, S. N.; Annable, L.; Sourkes, T. L. Research Department, Hopital Louis-H. Lafontaine, 7401 Rue Hochelaga, Montreal, Quebec, Canada H1N 3M5 **Tryptophan-nicotinamide, imipramine and their combination in depression: a controlled study.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(4):395-414, 1979.

The effectiveness of tryptophan nicotinamide, imipramine, or tryptophan nicotinamide imipramine combination was compared in severely depressed patients. Although there were no substantial differences between the three treatments, the efficacy of tryptophan nicotinamide tended to diminish after 2 weeks. The therapeutic response of patients treated with tryptophan nicotinamide was significantly correlated with the rise in plasma tryptophan. For the tryptophan nicotinamide imipramine group, however, therapeutic response and rise in plasma tryptophan were negatively correlated, implying that tryptophan levels were too high in some patients. The data suggest that tryptophan nicotinamide may be as effective as imipramine in unipolar patients, providing the dose is kept within the therapeutic range. 62 references. (Author abstract modified)

003631 Chouinard, Guy; Jones, Barry D.; Young, Simon N.; Annable, Lawrence. Research Dept., Hopital Louis-H. Lafontaine, 7401 rue Hochelaga, Montreal, Quebec, Canada H1N 3M5 **Potentiation of lithium by tryptophan in a patient with bipolar illness.** American Journal of Psychotherapy. 136(5):719-720, 1979.

The first report of potentiation of lithium by tryptophan in a patient with bipolar illness who responded poorly to lithium is presented. The patient had been treated with tricyclics, lithium alone, and subsequently with lithium in combination with a neuroleptic, but these treatment regimens had not adequately controlled her manic or depressive symptoms or altered her illness cycle's length. The addition of tryptophan nicotinamide to lithium resulted in an almost complete remission of symptoms. The first effect was seen 7 weeks after addition of tryptophan nicotinamide, with a reduction in the severity of the depressed phase. After 10 weeks, the patient entered her first extended period of normality since the illness began 4 years ago. It is hypothesized that only high doses of tryptophan are of therapeutic value in bipolar illness, but it is unknown whether tryptophan potentiates the action of lithium or has a therapeutic effect of its own. 7 references.

003632 Cohen, Robert M. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20205 **Memory and cognitive disorders.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 207).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Recently described strategies that have been used to assess not only the efficiency of cognitive processes in patients with affective disorders but also the specific component changes in different memory related functions (such as short-term and long-term storage, consolidation, encoding, and state dependent storage and retrieval strategies) are discussed. Findings are reviewed from a series of studies to alter mood and psychomotor state in patients with affective disorder using physostigmine, amphetamine, and biogenic amine precursors. The results of these studies of memory, information processing, and the effects of psychoactive drugs on these functions provide new models for integrating cognitive with psychobiological contributions to the syndromes of depression and mania. 2 references. (Journal abstract modified)

003633 Della Corte, L.; Broadhurst, A. D.; Sgaragli, G. P.; Filippini, S.; Heeley, A. F.; James, H. D.; Faravelli, C.; Pazzagli, A. Instituto Interfacolta di Farmacologia e Tossicologia, University of Florence, Florence, Italy **Clinical response and tricyclic plasma levels during treatment with clomipramine.** British Journal of Psychiatry (London). 134(April):390-400, 1979.

Plasma levels of clomipramine and its metabolite desmethylclomipramine were measured and assessed against clinical response. Fifty depressed inpatients at two psychiatric units, one in Italy and the other in England, were treated with clomipramine either orally, or intravenously and orally. The comparison showed clear relationships especially in the case of desmethylclomipramine. In the intravenously treated group this was linear, in the orally treated group it was curvilinear. Plasma levels of desmethylclomipramine and administered clomipramine correlated highly. It is suggested by these findings, together with the fact that significant clinical improvement was observed in only 55% of the patients that titration of the administered dose to obtain more effective plasma levels of the metabolite might improve the clinical response to the drug in some patients. 27 references. (Author abstract modified)

003634 Dencker, Sven J.; Nagy, A. Department II, Lillhagen Mental Hospital, Box 3005, S-422 03 Hisings Backa 3, Sweden **Single versus divided daily dosages of clomipramine.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(3):326-333, 1979.

The effects of single versus divided daily dosages of clomipramine were investigated. Sixteen depressed patients were treated with a daily dose of 150mg clomipramine for 20 days. Every patient received the total dose at night for 10 days and three times daily for 10 day according to a double-blind, cross-over design. No differences were noted between the two dose regimens, either regarding the clinical effect or the side-effects. It is reported that the plasma level ratio of parent drug to demethylated metabolite was higher on single than multiple doses. 18 references. (Author abstract modified)

003635 Dudley, Donald L.; Volberding, Noel. Dept. of Psychiatry and Behavioral Sciences, Veterans Administration Hospital, Seattle, WA **Intravenous clomipramine and refractory depression.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 208).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Twelve patients with refractory unipolar depressions were treated with 90 minute daily infusions of clomipramine over a period of 21 days. The route of administration proved to be relatively free of side-effects and was well accepted by the patients. There were no significant laboratory or physiologic changes. In general, the treatment proved to be a reasonable antidepressant for this group of patients with a drop in the mean Zung rating from a pretreatment score of 77 (severe depression) to a posttreatment score of 49 (borderline normal). 2 references. (Journal abstract modified)

003636 Fischbach, R. Neurological Dept., Landesnervenklinik, Ignaz-Harrerstrasse 79, A-5020, Salzburg, Austria **Maprotiline in adult depressed patients: a study of the relation between clinical efficacy and serum concentrations after repeated intravenous and peroral administration.** Arzneimittel-Forschung (Aulendorf). 29(2):352-355, 1978.

The relationship between clinical efficacy and serum concentrations of maprotiline was examined in 15 adult depressed inpatients following initial intravenous administration and then peroral administration daily for 3 weeks in various dosages. The steady state serum concentrations attained were independent of the administered dosages. Results suggested that patients who maintain a high serum concentration will show a better therapeutic response to the drug. In 11 of 14 patients evaluated after 3 weeks daily administration, clinical response was excellent to very good. The drug was well tolerated when given by either route. 3 references. (Author abstract modified)

003637 Flemenbaum, Abraham; Cronson, Alvin J.; Weddige, Richard L. Louisiana State University, Shreveport, LA 71130 **Lithium in opiate abuse: a theoretical approach.** Comprehensive Psychiatry. 20(1):91-99, 1979.

It is hypothesized that as early onset affective disorder frequently manifests itself atypically, a large number of depressive patients may be overlooked or misdiagnosed and frequently end up with problems of chemical dependence, including opiates. It is suggested that appropriate prophylaxis with lithium will produce clear cut improvement in a significant number of them. An overview of the literature on the outcome of methadone maintenance programs reveals a need, usually overlooked, for treatment of serious affective disorders, specially depression with other drug usage and/or suicide. Animal and human evidence are cited that show the beneficial effects of lithium on opiate abuse. 53 references.

003638 Frolich, J. C.; Leftwich, R.; Ragheb, M.; Oates, J. A.; Reimann, I.; Buchanan, D. Dr. Margarete Fischer-Bosch-Institute of Clinical Pharmacology, Auerbachstrasse 112, D-7000, Stuttgart 50, Germany **Indomethacin increases plasma lithium.** British Medical Journal (London). 6171:1115-1116, 1979.

The effects of indomethacin on plasma lithium concentrations and renal lithium clearance were investigated in three manic patients and four normal volunteers. After steady-state lithium concentrations had been reached, subjects received indomethacin placebo for 3 to 7 days, indomethacin (50mg thrice daily) for 7 days, and placebo again for 3 to 7 days. Indomethacin increased plasma lithium concentrations 59% in psychiatric patients and 30% in volunteers. Renal lithium clearance was reduced by indomethacin by 31% in the group as a whole and prostaglandin synthesis was reduced by 55%. Results suggest that the lithium/indomethacin interaction may be clinically important; and that renal clearance may be affected by a prostaglandin dependent mechanism, possibly located in the distal tubule. 9 references. (Author abstract modified)

003639 Greenberg, Joel. Science News, 1719 N Street NW, Washington, DC 20036 **Cracking the cycles of depression and mania.** Science News. 114(22):367, 1978.

Studies conducted at the Clinical Psychobiology Branch of NIMH have shown that abnormal biological rhythms may contribute to the development of manic depression and other affective disorders. Using a sensitive negative ionization assay procedure, NIMH scientists found that melatonin (an indicator of brain norepinephrine) shows cyclic peaks in January and July, while platelet serotonin has a reciprocal cycle with peaks in May and October, which are known to be high suicide months. Other studies have shown that patients with affective disorders often have circadian rhythms than are slightly out of phase with the standard 24 hour day. Experimental alterations in sleep cycles in these patients have produced dramatic improvements lasting for about 2 weeks, which is also the time required for most tricyclic and lithium drug treatments to take effect. These studies suggest that drug effects may differ with the phase of the illness and time of year.

003640 Grof, Paul; MacCrimmon, Duncan; Raab, Ernst; Murphy, Dennis. Research Unit, Hamilton Psychiatric Hospital, Hamilton, Ontario, Canada **Responders and non-responders to long-term lithium.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 66).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Factors discriminating between responders and nonresponders to the long-term lithium treatment are elucidated, thus helping to focus further research on mechanisms responsible for lithium's stabilizing effect. Long-term lithium treatment of up to 9 years was given to 241 affectively ill patients with a high recurrence potential. Samples of complete responders and clear failures were compared on a number of clinical, biological, and psychosocial variables. Responders differed significantly from nonresponders in the MMPI profile during symptom free intervals, MNS blood groupings, bodyweight changes, frequency of previous episodes, family history, and clinical subtype of affective illness. However, no differences could be demonstrated in a substantial number of laboratory and clinical variables. Variables that differentiated between the groups, as well as their configurations, are reported. (Journal abstract modified)

003641 Halaris, Angelos E.; DeMet, Edward M. Dept. of Psychiatry, University of Chicago, Chicago, IL 60637 **Effects of the potential antidepressant AHR-1118 on amine uptake and on plasma 3-methoxy-4-hydroxyphenylglycol in manic-depressive illness.** Psychopharmacology Bulletin. 15(2):95-97, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of the NIMH, held in Key Biscayne, FL, May 1978, the effects of the potential antidepressant 3-(diphenyl-methylene)-1-ethylpyrrolidine HCl (AHR-1118) on amine uptake and on plasma 3-methoxy-4-hydroxyphenylglycol in manic-depressive illness are described. The overall potency of AHR-1118 in inhibiting amine uptake or inducing release was initally assessed in synaptosomal suspensions from whole brain. The drug proved to be primarily a reuptake blocker. In an open clinical trial with seven depressed patients, AHR-1118 caused a transient increase in plasma 3-methoxy-4-hydroxyphenylglycol levels during the first and second weeks of treatment. All patients showed a rapid clinical improvement during the 4 week duration of the study. 2 references.

003642 Helmchen, H. Freien Universitat Berlin, Nussbaumallee 36, D-1000 Berlin 19, Germany **Current trends of research on antidepressive treatment and prophylaxis.** Comprehensive Psychiatry. 20(3):201-214, 1979.

Current trends in research on antidepressive therapy and prophylaxis are examined, focusing on unsolved clinical problems, lack of knowledge, and disadvantages and risk. It is contended that: 1) the concepts in this area are not clear, particularly in the relationship between therapy and prophylaxis; 2) the generalization possibilities of research results gained from hospitalized depressed patients are limited to an unknown degree; 3) the classification system for depressions is insufficiently therapy oriented; 4) the conditions of therapy resistance and the development of chronic depression are generally not understood; 6) antidepressant treatment procedures are combined haphazardly; and 7) the effective latency of antidepressant medication is theoretically unclarified and represents a practical difficulty for clinicians. 69 references. (Author abstract modified)

003643 Johnson, D. A. W. University Hospital of South Manchester, Manchester M20 8LR, England **A double-blind comparison of flupenthixol, nortriptyline and diazepam in neurotic depression.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(1):1-8, 1979.

A double-blind trial of flupenthixol, nortriptyline, and diazepam in neurotic depression using flexible dose schedules is reported which suggests that each drug is an efficient treatment for this category of depression, although the patterns of response and prevalence of side-effects varied. Sixty-six patients between the ages of 17 and 65 years, diagnosed as suffering principally from neurotic depression, received a flexible dose of one of the medications. No significant differences could be shown on rating scales of depression or anxiety, but trends favored flupenthixol. However, clinical evaluation suggested that flupenthixol was more effective than diazepam on mental state examination had a greater overall therapeutic effect than nortriptyline, and had fewer side-effects than nortriptyline. 21 references. (Author abstract modified)

003644 Kanig, K.; Tuluweit, K. Nattermann & Cie. GmbH, Klinische Forschung, Nattermannallee 1, D-5000 Cologne 30, Germany **Synopsis of results of clinical trials with amitriptylinoxide.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1920-1923, 1978.

The use of amitriptylinoxide as an antidepressive agent is discussed. The profile of the drug's action is described, and clinical studies using amitriptylinoxide are reviewed, noting that generally the value in the laboratory findings did not surpass the normal range in the course of treatment with amitriptylinoxide. It is suggested that amitriptylinoxide is contraindicated in cases with a previous history of agranulocytosis, in acute delirous states, and in the presence of acute poisoning with alcohol, hypnotics, analgesics, or neuroleptics. Precautionary measures are specified. 5 references. (Author abstract modified)

003645 Kishimoto, Hideji; Hama, Yuki. Department of Neurology and Psychiatry, Yokohama City University School of Medicine, Yokohama, Japan **The level and circadian rhythm of plasma tryptophan, tyrosine, and cortisol in manic-depressive patients, and their clinical significance.** Neurochemical Research. 3(5):654-655, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The circadian rhythm in plasma levels of tryptophan, tyrosine, and cortisol was determined in manic-depressive patients and in normal subjects. Free plasma tryptophan reached a maximum in the morning in normal subjects, but was

at its lowest in the morning in depressed patients. Total plasma tryptophan and tyrosine reached a minimum at noon and maximum at 8p.m. in normal subjects; depressed patients showed a similar circadian rhythm, but had lower total tryptophan and tyrosine levels than normals. Plasma cortisol reached its maximum at 8a.m. and minimum at midnight in normal subjects; depressed patients showed a similar circadian rhythm, but had higher cortisol levels throughout the cycle. Levels of plasma total protein, albumin, and nonesterified fatty acids did not differ significantly between normal and depressed subjects. It is suggested that the antidepressive effects of imipramine may result from the release of tryptophan from its binding with plasma protein.

003646 Kocsis, James H.; Stokes, Peter E. Payne Whitney Clinic, 525 East 68th Street, New York, NY 10021 **Lithium maintenance: factors affecting outcome.** American Journal of Psychiatry. 136(4B):563-566, 1979.

The charts of 61 manic-depressive outpatients maintained on lithium for 6 to 75 months were examined to discover possible relationships between clinical outcome and various demographic, clinical, and pharmacological variables. Good outcome (50% reduction in episode frequency) did not correlate with any demographic or most natural history variables. A history of frequent episodes was correlated with decreased episode frequency but not with lower percentage of prophylaxis failure during followup. A nonsignificant trend toward decreasing episode occurrence with increasing duration of lithium maintenance was present. Depressions occurred considerably more frequently than manic episodes at adequate maintenance plasma lithium levels. More medication noncompliance was found among patients who experienced both manic and depressive relapses. 21 references. (Author abstract)

003647 Kocsis, James H.; Stokes, Peter E. Department of Psychiatry and Medicine, Cornell University Medical College, New York, NY **Lithium maintenance: factors affecting response.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 27).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Sixty-one bipolar manic-depressive outpatients were maintained on lithium carbonate from 6 to 72 months on an open basis in a study to identify factors associated with the success or failure of this therapy. Positive outcomes were associated with rapid cycling, a diagnosis of primary rather than secondary bipolar disorder, and compliance to lithium treatment. Criteria are suggested for identifying homogeneous subgroups of lithium maintenance responders and nonresponders for clinical and biological studies. 2 references. (Journal abstract modified)

003648 Lerner, Pauline; Major, L. F.; Murphy, D. L.; Lipper, S.; Lake, C. R.; Lovenberg, W. Biological Psychiatry Branch, NIMH, NIH, Bethesda, MD 20014 **Dopamine-beta-hydroxylase and norepinephrine in human cerebrospinal fluid: effects of monoamine oxidase inhibitors.** Neuropharmacology (Oxford). 18(4):423-426, 1979.

The effect of the monoamine oxidase inhibitors clorgyline and pargyline on central noradrenergic function was assessed in depressed patients by measuring dopamine-beta-bydroxylase (DBH) and norepinephrine in cerebrospinal fluid (CSF). The drugs caused a significant decrease in DBH in the CSF, which is consistent with a reduction i the release of DBH into CSF as n noradrenergic firing is slowed by the drugs. Levels of DBH and norepinephrine in CSF were highly correlated. The ratio of noreinephrine to DBH in the CSF increased when the patients were treated with monoamine oxidase inhibitors, suggesting a drug-induced increase in brain norepinephrine. These results indicate that changes in CSF DBH may be useful as a marker for changes in central noradrenergic action activity in humans. 24 references. (Author abstract modified).

003649 Lonowski, Daniel J.; Sterling, F. E.; Kennedy, Julien C. Central Louisiana State Hospital, P.O. Box 3, Pineville, LA 71360 **Method for evaluation of neuroleptic dosage reduction.** Psychological Reports. 44(1):15-20, 1979.

A new approach to the evaluation of reduction of maintenance neuroleptic dosages which reduces the ethical and experimental problems associated with the two design strategies previously employed (the end point and interrupted designs) is described. The proposed procedure, an interrupted design with statistical criteria for clinical relapse, uses double-blind objective ratings of patients' psychiatric status. The mean level of function and degree of variability for each S are statistically determined and an a priori probability for clinical relapse is applied across all Ss. Unlike end point designs, this procedure is responsive to the clinical decompensation of patients. In addition, the use of statistical criteria for clinical relapse reduces the introduction of experimental bias of results, common to past interrupted designs which relied on subjective decision processes of the experimenter to define clinical relapse. 8 references. (Author abstract modified)

003650 Mendels, J.; Ramsey, T. Alan; Dyson, William L.; Frazer, Alan. Dept. of Psychiatry, Veterans Administration Hospital, Philadelphia, PA **Lithium as an antidepressant.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 67).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The question of whether lithium is an effective antidepressant is considered in regard to the available evidence from the literature and clinical experience with 100 depressed patients. A critical question relates to defining the characteristics of the lithium responsive depressed patient as compared with the nonresponder. One clear difference is diagnosis: 74% of the bipolar patients respond while only 24% of unipolar patients show a clear cut response. Numerous other variables which have been examined are detailed, and an examination of the relationship between biological variables and clinical response is presented. (Journal abstract modified)

003651 Moller, S. E.; Kirk, L.; Honore, P. Research Laboratory C-D, Dept. D, Sct. Hans Mental Hospital, DK-4000 Roskilde, Denmark **Free and total plasma tryptophan in endogenous depression.** Journal of Affective Disorders (Amsterdam). 1(1):69-76, 1979.

The free and total plasma trytophan concentrations of 41 female depressives were measured. Fifteen patients were subsequently treated with L-tryptophan. The free and total tryptophan were normal in the drug free depressives and in the depressives on lithium. No significant differences in free and total plasma tryptophan were found between unipolar and bipolar depressed subjects, or between patients who recovered from depression following L-tryptophan therapy and patients who were resistant. Results suggest that: 1) the basal free tryptophan concentration in the plasma of depressed subjects is normal; and 2) neither free nor total plasma tryptophan concentrations are valid predictors for the course of a treatment of depressed subjects with L-tryptophan. 33 references. (Author abstract modified)

003652 Moller, Svend E.; Amdisen, Amdi. Research Laboratory D, Sct. Hans Mental Hospital, Roskilde, Denmark **Plasma neutral amino acids in mania and depression: variation during acute and prolonged treatment with L-tryptophan.** Biological Psychiatry. 14(1):131-139, 1979.

Free tryptophan (TRY) and plasma neutral amino acids, including kynurenine, were determined in a bipolar manic-depressive patient who had shown resistance to other treatments, before, after a single load, and during prolonged treatment with L-TRY. Data for the patient were compared with data from healthy control subjects in order to evaluate TRY availability to the brain. A relative deficiency of TRY in plasma, as measured by the ratio of TRY to those amino acids which compete with TRY during transport processes, was found in this patient. Further, the patient showed an increased area under curve of plasma TRY after a load, and an increase in the competing amino acids during the load compared to a decrease in control subjects. During L-TRY treatment, competing amino acids increased in plasma. Results suggest that this patient suffered from a dysfunction of the processes which mediate active transport of TRY and other large neutral amino acids into tissues, including the brain. 39 references. (Author abstract modified)

003653 Montgomery, S. A.; McAuley, R.; Montgomery, D. B.; Braithwaite, R. A.; Dawling, S. Psychiatric Research Unit, Preston Hall Hospital, Maidstone, Kent, England **Dosage adjustment from simple nortriptyline spot level predictor tests in depressed patients.** Clinical Pharmacokinetics (Balgowlah). 4(2):129-136, 1979.

In a kinetic and 4 week treatment study, 20 routine patients with endogenous depression were tested for nortriptyline concentrations. Steady state plasma nortriptyline concentrations above 200 mcg/L were associated with a highly significant poorer therapeutic outcome. The correlations between 24, 48, and 72 hours concentrations and steady state concentrations were very good, and better than the correlation between half-life and steady state. The Spearman rank correlation between amelioration of depression measured by the Hamilton Rating Scale and the 24, 48, 72 hour concentration were highly significant, but for half-line the correlation was not significant. The single 48 hour plasma nortriptyline concentration following a single oral dose is recommended as a reliable simplified monitoring test suitable for a busy clinic. The test is useful for dosage adjustment to maximize antidepressant action and minimize toxicity. A tentative dosage adjustment schedule for individualizing treatment based on the 48 or 24 hour plasma concentration is proposed. 28 references.

003654 Pallegoix, M.; Rogowski, J. C.; Attalha, S.; Bonnafoux, A. Centre Psychotherapique de Jura, F-39100 Dole-Saint-Ylie, France **/Use of lorazepam as a replacement for sedatives on a psychiatric ward./** Utilisation du lorazepam en remplacement des neuroleptiques sedatifs dans un service de psychiatrie. Psychologie Medicale. 10(1):181-188, 1978.

The efficacy of lorazepam versus sedative tranquillizers was investigated. Fifty patients in a psychiatric hospital were gradually given lorazepam which slowly replaced neuroleptic tranquillizers. It was found after 12 months of study that lorazepam by itself could satisfactorily replace sedative neuroleptics in chronic psychotics and oligophrenics. It was found to be a powerful neurosedative which did not reduce alertness, but inhibited anxiety and ensured better sleep. No trace of dependence was observed during prolonged treatment, and its effects did not seem to diminish with time. No side-effects were observed. 10 references. (Journal abstract modified)

003655 Paykel, E. S.; Coppen, A. St. George's Hospital Medical School, London, England **Psychopharmacology of affective disorders.** Oxford, Oxford University Press, 1979. 261 p. L12.50.

Aspects of affective disorders including classification and description, biochemistry and animal models, rating methods, and general aspects of acute and long-term management are described. The pharmacological section is concerned with specific affects of drugs, the various groups of psychoactive drugs, pharmacokinetics, and clinical trial methods. The amine theory of depression is examined which presents a conflict since opinions vary in current thinking in this rapidly changing field.

003656 Quitkin, Frederic; Rifkin, Arthur; Kane, John. Dept. of Psychiatry, Columbia University, New York, NY 10027 **The prophylactic effect of lithium and imipramine in bipolar II and unipolar patients: a preliminary report.** Psychopharmacology Bulletin. 15(2):35-39, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the prophylactic effects of lithium and imipramine in bipolar II and unipolar depressive illness patients were investigated. Relapse rates of the first 35 unipolar and bipolar II manic-depressive patients who entered the controlled phase of an ongoing evaluation of the prophylactic value of lithium alone or in combination with imipramine were analyzed. Lithium had a prophylactic effect in unipolar patients and possibly also in bipolar II patients. Imipramine did not have such an effect in either group of patients. 14 references.

003657 Reus, V. I.; Silberman, E.; Post, R. M.; Weingartner, H. Langley Porter NPI, 401 Parnassus Avenue, San Francisco, CA 94143 **D-amphetamine: effects on memory in a depressed population.** Biological Psychiatry. 14(2):345-356, 1979.

The effect of intravenous d-amphetamine on memory functions in a group of depressed patients was examined in a double-blind, placebo controlled study. Active drug administration resulted in an increase in verbal free recall but no change in cued recall, suggesting specific effects on memory processes. The level of psychological processing of the presented stimulus was shown to interact with drug-induced facilitation of recall. Improvement in memory of more shallowly processed material under amphetamine related significantly to subjects' baseline indices of noradrenergic function. Drug-induced changes in mood did not correlate with improvement in cognitive functioning. The interrelationships between biochemical determinants of mood and memory are discussed in light of the findings. 49 references. (Author abstract)

003658 Rey, Alix C.; Jimerson, David C.; Post, Robert M. Section on Psychobiology, NIMH, Bethesda, MD 20014 **Cerebrospinal fluid lithium levels.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 27-28).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Ten patients with a diagnosis of primary affective disorder were studied during a double-blind placebo controlled lithium trial to gather information regarding the relationship of serum, red blood count, and cerebrospinal fluid (CSF) to brain levels, therapeutic efficacy, and side-effects of lithium. Absolute levels of CSF lithium measured after three weeks of treatment were significantly higher than those measured during the first week to 10 days. It is possible that the relatively slow increase to maximal values during a conventional schedule of lithium administration might partially explain the lag in onset of clinical response. Although the absolute CSF lithium levels or

the CSF/serum ratio failed to show significant relationship to degree of clinical response, these lithium measures may provide a closer reflection of central nervous system tissue levels than those in blood and help clarify the time course of clinical efficacy and toxicity. (Journal abstract modified)

003659 Rivinus, Timothy M.; Harmatz, Jerold S. Children's Hospital Medical Center, 300 Longwood Avenue Boston, MA 02115 **Diagnosis and lithium treatment of affective disorder in the retarded: five case studies.** American Journal of Psychiatry. 136(4B):551-554, 1979.

Five case reports of institutionalized retarded patients with manic-depressive illness who were treated with lithium are described. The patients showed significant symptom reduction in a single blind, placebo controlled, 3 year trail of lithium; the number of illness episodes was reduced and symptoms deceased in all major illness dimensions. These findings indicate that major affective disorder can be both diagnosed and treated in individuals primary mental retardation. 24 references. (Author abstract modified)

003660 Robinson, Donald S.; Nies, Alexander; Cooper, Thomas B.; Ravaris, C. Lewis; Ives, John O. Dept. of Psychiatry, University of Vermont College of Medicine, Burlington, VT 05401 **Tricyclic plasma levels in depressed outpatients.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC American Psychiatric Assn., 1978. 321 p. (p. 47).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. In a controlled, double-blind trial of amitriptyline versus phenelzine in the treatment of depressed outpatients, plasma drug levels of amitriptyline and its metabolite, nortriptyline, were related to clinical effects. More than 50 patients were included in each treatment group and therapeutic efficacy was demonstrated for each drug in this heterogeneous sample of patients with depressive illnesses. In related studies of tricyclic antidepressant (TCA) pharmacokinetics, important relationships were found between patient age and steady state plasma levels and disappearance half-lives of amitriptyline, imipramine, and their desmethyl metabolites. The implications of these findings for TCA dosing strategies in adults and elderly patients are discussed. (Journal abstract modified)

003661 Sacchetti, E.; Allaria, E.; Negri, F.; Biondi, P. A.; Smeraldi, E.; Cazzullo, C. L. University of Milano Medical School, Institute of Clinical Psychiatry, Milan, Italy **3-Methoxy-4-hydroxyphenylglycol and primary depression: clinical and pharmacological considerations.** Biological Psychiatry. 14(3):473-484, 1979.

Pretherapeutic urinary excretion of 3-methoxy-4-hydroxyphenylglycol (MHPG) was studied in 25 primary depressed patients. The results indicate that: 1) there exists a wide variability among primary depressives with respect to MHPG excretion; 2) age of onset together with polarity of the disease may account for the nonhomogeneous division of the patients according to MHPG levels; 3) the other variables considered, with the possible exception of motor activity, do not explain the dichotomy between high or normal and low MHPG levels, even though it is possible that they influence MHPG excretion to some extent, with the consequent possibility of errors in subclassification of the patients at the boundaries between the two groups; 4) the correlation between motor retardation and low MHPG excretion is positive, but probably due to a frequent association between this motricity state and primary depression of bipolar early onset type; and 5) treatments with chlorimipramine and, to a lesser degree of specificity, with amitriptyline are particularly indicated in patients with normal or high MHPG. Some practical and theoretical implications deriving from these data are briefly discussed. 33 references. (Author abstract)

003662 Scharbach, Hughes. Service de Psychiatrie IV, C.H.R., 85, rue Saint-Jacques, F-44035 Nantes Cedex, France /**Nortriptyline and depressive psychopathology.**/ Nortriptyline et psychopathologie depressive. Psychologie Medicale. 10(1):169-177, 1978.

Nortriptyline and its effects on depressive psychopathology were studied in 28 patients who were given oral doses between 50 and 300mg. It was found that in addition to its antidepressant properties, nortryptiline (a tricyclic compound belonging to the iminodibenzyl group) has a neuroleptic activity which allows manifestations of anxiety to be controlled without very marked or lasting repercussions on alertness. This thymoanaleptic agent can be used as initial therapy in severe morbid illnesses in hospital or as outpatient initial therapy when depressive symptomatology is less severe. Even when administered orally, it was found that the drug has an excellent effect on reactive neurotic depressive states. One of the facts that makes this contribution to clinical studies unusal is that out of the 28 patients, 8 were psychotics at the postevolutional state, whose depressive mood proved to be responsive to nortriptyline. Side-effects were moderate and transitory. 45 references. (Journal abstract modified)

003663 Scherrer, Pierre. Societe Medico-Psychologique, Auxerre, Paris, France **Action of intravenous clomipramine in depressive states.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 208-209).

A summary of a paper read at the 131st annual meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The advantages and drawbacks of the perfusion of clomipramine with patients suffering depression are discussed. This therapy must be administered in a hospital. While it acts surely and quickly, it is a form of treatment demanding careful attention, the therapy being administered by a drip system injecting isotonic serum for several hours, which gives the treatment particular importance. Inhibitions should not be lifted too hastily, particularly in melancholy since this might lead to suicide attempts. It is necessary to take into account heart condition and blood pressure, since falls in blood pressure or hypertension have been observed. (Journal abstract modified)

003664 Schlesser, Michael A.; Winokur, George; Sherman, Barry M. Dept. of Psychiatry, University of Iowa College of Medicine, Iowa City, IA 52242 **Genetic subtypes of unipolar primary depressive illness distinguished by hypothalamic-pituitary-adrenal axis activity.** Lancet (London). 1(8119):739-741, 1979.

Serum cortisol response to the overnight dexamethasone suppression test was investigated in 86 patients with unipolar primary depressive illness and 80 nondepressed controls (45 with mania and 35 with schizophrenia), and influence of genetic subtype (based on family psychiatric history) on serum cortisol response was examined. Resistance to suppression of serum cortisol by dexamethasone was found in 37 of 86 (43%) depressives and none of the 80 controls. Genetic subtypes differed significantly in terms of nonsuppression. Twenty-three of 28 patients with familial pure depressive disease demonstrated no suppression; 13 of 35 patients with sporadic depressive disease demonstrated no suppression; one of 23 patients with depression spectrum disease demonstrated no suppression. The three genetic subtypes were further distinguished by age of onset and number of previous depressive episodes, but not by severity of depression. It is suggested that unipolar primary depressive illness is three or more separate illnesses, each with a potentially distinc-

tive mode of inheritance, pathophysiology, neurochemistry, clinical course, and treatment response. 22 references. (Author abstract modified)

003665 Schreiner, Helen C.; Dunner, David L.; Meltzer, Herbert L.; Fieve, Ronald R. Mt. Sinai School of Medicine, New York, NY **The relationship of the lithium erythrocyte: plasma ratio to plasma lithium level.** Biological Psychiatry. 14(1):207-213, 1979.

The relationship of the lithium erythrocyte/plasma ratio to plasma lithium concentration was reviewed in 36 inpatients and outpatients with affective disorders. For some patients there was a linear correlation between lithium erythrocyte/plasma lithium ratio and plasma lithium concentration. For these patients, a graph of the slopes and intercepts of the lithium erythrocyte/plasma ratio versus plasma lithium data formed a line that was not significantly different from the data of Lee et al (1975). Significant correlations were found between the slopes and intercepts of the lithium erythrocyte/plasma ratio versus plasma lithium data and the magnitude of active lithium efflux from the erythrocyte. Data confirm Lee et al findings that the lithium erythrocyte/plasma ratio is dependent on the plasma lithium concentration. This is related to lithium efflux from the erythrocyte. 17 references. (Author abstract modified)

003666 Schubert, Daniel S. P. Dept. of Psychiatry, Cleveland Metropolitan General Hospital, 3395 Scranton Road, Cleveland, OH 44109 **A biphasic change in mood with a tricyclic antidepressant.** Journal of Nervous and Mental Disease. 167(4):248-249, 1979.

To determine whether changes in mood depression occur at the end of 3 to 4 weeks in patients treated with tricyclic antidepressants, eight depressed patients received 150mg of clomipramine for 4 weeks. Subjects completed the Profile of Mood States five to seven times during the 1st week of treatment and five to seven times at the end of treatment. Moods showing significant decrease from the beginning to end of the 1st week were: tension/anxiety, depression, anger/hostility, and confusion. The only changes from beginning to end of the 4 week period were an increase in vigor and a decrease in fatigue. The occurrence of rapid and slow mood changes with antidepressants suggests that the former are due to sedative effects and the latter occur at the rate of improvement in the disease depression. 7 references. (Author abstract modified)

003667 Shoda, Hideshi; Ogata, Hiroshi. Department of Psychiatry, Faculty of Medicine, Shinshu University, Matsumoto, Japan **Cyclic AMP levels in the cerebrospinal fluid of manic-depressive psychosis.** Neurochemical Research. 3(5):655, 1978.

A summary of a paper read at the 20th Annual Meeting of the Japanese Neurochemical Society, held in Osaka in October 1977, is presented. The concentration of cyclic adenosine monophosphate (AMP) in lumbar cerebrospinal fluid (CSF) was measured in 7 manic patients and in 12 depressive patients treated with 600 to 800mg/day lithium carbonate. The cyclic AMP levels were 31.9pmol/ml in depressed patients, 37.3pmol/ml in manic patients, and 49.8pmol/ml in patients with neurosis or epilepsy who served as controls. Patients who were treated successfully with lithium (1 manic patient and 6 depressed patients) all showed increased levels of CSF cyclic AMP upon recovery. Results suggest that brain cyclic AMP may be involved in the symptomatic pathogenesis of manic-depressive psychosis and that the therapeutic effect of lithium may be related to the increase of the lumbar CSF cyclic AMP level.

003668 Steinberg, Fred A. Linn County Psychiatric Clinic, 400 Third Avenue, S.E., Cedar Rapids, IA 52401 **The delineation of an MMPI symptom pattern unique to lithium responders.** American Journal of Psychiatry. 136(4B):567-569, 1979.

An attempt to delineate an MMPI symptom pattern unique to lithium responders is described. Statistical analyses of MMPI scores of lithium responders, lithium nonresponders, and a group of patients receiving other psychotropic drugs revealed that the depressed, psychasthenia, mania, and social introversion scale scores significantly differentiated the lithium response and nonresponse groups. No strong indications of significant difference were found between the MMPI scale scores of the lithium nonresponse and psychotropic groups. Results suggest that there is a lithium responsive syndrome that exhibits a distrinctive symptom pattern regardless of its varying phenomenological features in different individuals. 10 references. (Author abstract modified)

003669 Swartz, Conrad. 500 Newton Road, Iowa City, IA 52242 **Depression with nonauditory hallucinations: success with phenelzine.** Psychosomatics. 20(4):286-287, 1979.

The use of phenelzine with severely depressed patients suffering from nonauditory hallucinations is illustrated with two case reports. These reports indicate that phenelzine may help patients who do not respond to tricyclics, lithium carbonate, and/or electroconvulsive therapy, and who suffer from concomitant nonauditory hallucinations. Resemblance between the nonauditory hallucination of depression and those occurring in the preictal states of some patients with epilepsy suggest that anticonvulsant drugs may be useful in hallucinatory functional psychoses. 11 references.

003670 Til, Turan M. Dept. of Biological Psychiatry, New York Medical College, New York, NY 10029 **New drugs for the treatment of therapy-resistant depressed patients.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assoc., 1978. 321 p. (p. 166).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. New drugs for the treatment of therapy resistant depressed patients are discussed. More than 3 months' continuous use of tricyclic antidepressants without response is unlikely to be successful. After eliminating other somatic contributing factors, the use of drugs with different chemical configurations and/or combinations is recommended. Many new compounds, which are presently studied in the United States, will probably be extremely important assets in the treatment of depressed patients who do not respond to the classical tricyclic antidepressants and MAO inhibitors. (Journal abstract modified)

003671 Tsutsui, S.; Yamazaki, Y.; Namba, T.; Tsushima, M. 2nd Dept. of Internal Medicine, Toho University, School of Medicine, 6-11-1, Ohmori-Nishi, Ohta-ku, Tokyo, 143, Japan **Combined therapy of T3 and antidepressants in depression.** Journal of International Medical Research (Northampton). 7(2):138-146, 1979.

The combined use of imipramine and clomipramine plus T3 in the treatment of depression is reported. In these cases a tyrotrophin releasing hormone (TRH) test for depression found a low thyroid stimulating hormone (TSH) responses. However, when the TRH test was made at the time of improvement of the symptoms due to the combined use of drugs and compared with the state at pretreatment, it was confirmed that the TSH response did go back to normal. 8 references. (Author abstract modified)

003672 Vendsborg, P. B. Psychochemistry Institute, Rigshospitalet, 9 Blegdamsvej, DK-2100 Copenhagen 0, Denmark **Lithium**

treatment and glucose tolerance in manic-melancholic patients. Acta Psychiatrica Scandinavica (Kobenhavn). 59(3):306-316, 1979.

Intravenous glucose tolerance was measured in manic melancholic patients given one daily lithium dose for relapse prevention. It was found that glucose tolerance was increased for some hours after each lithium adminsitration. In the 1st week of treatment, glucose disposal rate was increased up to 12 h after lithium ingestion. In long-term treated patients, glucose tolerance was increased 2 h after lithium administration in long-term treated patients. Concomitant changes in lactate triglycerides, free glycerol, and electrolytes, which were measured in serum, are reported. 46 references. (Author abstract)

003673 Watanabe, Shosuke; Yokoyama, Shigeo; Kubo, Shinsuke; Iwai, Hiroyuki; Kuyama, Chie. Department of Psychiatry, Kawasaki Medical School, Kurashiki, Japan **A double-blind controlled study of clinical efficacy of maprotiline and amitriptyline in depression.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 32(1):1-31, 1978.

A multiclinic double-blind controlled study was performed on the effects of maprotiline (MAP) and amitriptyline (AMT) on male and female patients suffering from various types of depression. The global improvement ratings were compared and found not significantly different for any week between the two treatments. The global improvement ratings by the characteristic features of patients did not show any significant difference in any items studied between the two treatments. The symptomatic improvement ratings by the physician indicated that AMT was more effective on anxiety. The symptomatic improvement ratings by the patients indicated that MAP was more effective on work and AMT on pathos, feeling of satisfaction, withdrawal, and loss of libido. During the treatment period 74.3% of the MAP group and 76.9% of the AMT group of patients showed some side effects of accompanying symptoms, with no significant difference between the two treatments. However, the incidence of tremor was significantly lower in the MAP group, and the MAP group tended to be less liable to such anticholinergic side effects as dry mouth, constipation, trouble of accommodation, urinary disturbance, and palpitation. It is concluded that MAP is as effective against depression as AMT and less liable to the anticholinergic side effects. 29 references. (Author abstract modified)

003674 Watts, Arthur. no address **Depression: Why do people get the "blues"? 3: What the nurse can do to help.** Nursing Mirror (London). 147(23):41-42, 1978.

In the last of a three part series, psychotherapeutic and psychopharmacological management of depression, as well as the role of the nurse in management, are discussed. Because of the varied duties, the nurse is in an excellent position to initially identify depression in patients. The nurse should, consequently, have an understanding of the rationale for treatment, be prepared to help, and provide advice and referral services. The first step in management is to gain the patient's confidence and encourage him to speak openly of his problems. The need for sympathetic and supportive listening is emphasized. Psychopharmacological treatment may involve one of the tricyclic antidepressants or the monoamine oxydase inhibitors. Lithium is the drug of choice for mania. If the patient fails to respond to counseling and/or medication, electroconvulsive therapy should be given.

003675 Weissman, Myrna M.; Prusoff, Brigitte A.; Dimascio, Alberto; Neu, Carlos; Goklaney, Mahesh; Klerman, Gerald L. Depression Research Unit, Connecticut Mental Health Center, 904 Howard Ave., Suite 2A, New Haven, CT 06519 **The efficacy of drugs and psychotherapy in the treatment of acute depressive episodes.** American Journal of Psychiatry. 136(4B):555-558, 1979.

The efficacy of tricyclic antidepressants and psychotherapy in the treatment of acute depressive episodes was investigated. A randomized controlled trial, comparing the combination of amitriptyline and short-term interpersonal psychotherapy, either treatment alone, and nonscheduled supportive psychotherapy in ambulatory patients with acute depression, is described. Results indicate that pharmacotherapy and psychotherapy along were equaly efficacious and better than nonscheduled treatment. The combination of psychotherapy and pharmacotherapy was more effective than either treatment alone and delayed the onset of symptomatic failure. 20 reference. (Author abstract modified)

003676 Weissman, Myrna M.; Prusoff, Brigitte A.; DiMascio, Alberto. Dept. of Psychiatry, Yale University School of Medicine, New Haven, CT 06520 **Research directions on comparisons of drugs and psychotherapy in depression.** Psychopharmacology Bulletin. 15(2):19-21, 1979.

In a summary of a paper presented at the session on the treatment of affective disorders of the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, research directions on comparisons of drugs and psychotherapy in depression are reviewed. A 16 week controlled clinical trial comparing the efficacy of a tricyclic antidepressant (amitriptyline) and short-term interpersonal psychotherapy, each alone and in combination in acutely depressed ambulatory patients, is described. Results demonstrate the efficacy of the combination of the two therapies in alleviating the symptoms of depression. 13 references.

003677 Yesavage, Jerome A.; Slater, Patrick; Berger, Philip A. Dept. of Psychiatry, Stanford University Medical Center, Standord, CA 94305 **Repertory grid and biochemical characterization of depression: a comparison of case reports.** Journal of Clinical Psychiatry. 40(5):232-235, 1979.

Two cases of depression are described: one which responded to psychotherapy, and another which responded to medication. These cases were evaluated by repertory grid analysis and by biochemical analysis. These results serve as the basis for a discussion of the use of such analysis as predictors of response in depression to psychotherapy or medication. 11 references. (Author abstract)

003678 Ziegler, Vincent E.; Biggs, John T. Dept. of Psychiatry, Washington University, St. Louis, MO 63130 **Tricyclic plasma levels: defining an optimal range.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 47-48).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Several studies of steady-state tricyclic plasma levels are reported. The relationship between steady-state plasma levels of amitriptyline (AT), nortriptyline (NT), and protriptyline (PT) and therapeutic response was examined in 64 depressed outpatients after 4 to 6 weeks of treatment. The response of the 35 patients with plasma levels within the therapeutic ranges for AT, NT, and PT was compared to that of the 29 patients with levels outside these therapeutic ranges. The patients within the therapeutic range had a significantly better outcome on all measures, thus confirming the value of these determinations in improving response to treatment. No clinically significant relationship was found between age, race, sex, or smoking and steady-state plasma levels. Change in heartrate was found to correlate with tricyclic plasma level in 32 patients. The

implications and use of these findings in the management of depressed patients are discussed. (Journal abstract modified)

10 DRUG TRIALS IN NEUROSES

003679 Ananth, Jambur; Solyom, Leslie; Bryntwick, Shirley; Krishnappa, Umashankar. Dept. of Psychiatry, McGill University, Montreal, Quebec, Canada **Chlorimipramine therapy for obsessive-compulsive neurosis.** American Journal of Psychiatry. 136(5):700-701, 1979.

An investigation of 20 patients with a history of treatment resistant obsessional neurosis who underwent a 4 week clinical trial of chlorimipramine is reported. Scores on the Psychiatric Questionnaire for Obsesive Compulsive Neurosis, the Leyton Obsessional Inventory, and three self-assessments indicate that although there was no significant change in obsessive ruminations, obsessive rituals, horrific temptations, or pervading doubt, there was a substantial, significant improvement in the obsessive symptom item and severity of obsessions, as well as anxiety, depression, and phobia. Side-effects were mild. It is believed that chlorimipramine is the most promising treatment for obsessive-compulsive neurosis. 9 references. (Author abstract)

003680 Fabre, L. F.; McLendon, D. Fabre Clinic, Houston, TX **Alprazolam efficacy in anxiety.** Clinical Pharmacology and Therapeutics. 25(2):223, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. The anxiolytic effects of alprazolam (0.6-2.7mg) and diazepam (10-45mg) were compared in 144 out patients. Patient evaluations on days 1, 8, 15, and 29 of treatment indicated that alprazolam was more effective than placebo in relieving anxiety. Diazepam also provided significant relief but was less frequently effective, especially in the early evaluation periods. Alprazolam was significantly more effective than diazepam in 10 comparisons associated with the Hamilton Anxiety-Rating Scale and had fewer side-effects. No consistent differences were seen between the drug groups in physical examinations, vital signs, and laboratory tests. (Author abstract modified)

003681 Ilaria, R. L.; Fann, W. E. Department of Psychiatry, Baylor College of Medicine, Houston, TX **A double-blind study of a sedative (doxepin) vs. a nonsedative (desipramine) tricyclic.** Clinical Pharmacology and Therapeutics. 25(2):230, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. The effects of desipramine (DMI) and doxepin (DOX) were compared in a double-blind trial in outpatients with depressive neurosis, using a dose range of 25-200mg/day. No significant difference in the final status of patients in the two drug groups was found, using the Hamilton Scale or the Clinical Global Impression. However, the doxepin group showed significantly faster improvement on two Hamilton Scale items, helplessness and late insomnia. There were no differences in side-effects or vital signs between the two drug groups. The most common side-effects were dry mouth for the desipramine group and drowsiness for the doxepin group. It is concluded that there is little difference between these two tricyclic antidepressants. (Author abstract modified)

003682 Laxenaire, M. Service de Psychologie Medicale et Psychotherapie, C.H.U.R., de Nancy, Hospital Jeanne-d'Arc, Dommartin-les-Toul, F-54201 Toul Cedex, France **/Results of a study of carpipramine (Prazinil) in 34 cases./** Resultats d'une etude sur la carpipramine (Prazinil): a propos de 34 cas. Psychologie Medicale. 10(1):159-166, 1978.

An experimental study of carpipramine, administered to 34 hospitalized patients, is described. The drug was given in a dose of 150 to 200mg per day for an average of 30 days to neurotic or psychotic patients who were predominantly suffering from asthenia, apragmatism, and inhibition. These symptoms were alleviated in the great majority of cases, especially with neurotic depression. The tolerance of the drug was found to be remarkable. Results indicate that it is possible to use the drug in association with hypnotics or tranquilizers. It is concluded that carpipramine may be considered to be a disinhibitor midway between neuroleptics and antidepressants. 22 references. (Journal abstract modified)

003683 Sappington, A. A.; Corssen, G.; Becker, A. T.; Tavakoli, M. Dept. of Psychology, University College, University of Alabama, Birmingham, AL 35294 **Ketamine-facilitated induced-anxiety therapy and its effect upon clients' reactions to stressful situations.** Journal of Clinical Psychology. 35(2):425-429, 1979.

The role of physiological arousal in the induced-anxiety therapy procedure was evaluated. Twenty-one normal subjects were asigned to either conventional induced-anxiety, induced-anxiety supplemented by the drug ketamine during arousal, or a no treatment condition. The dependent measures were heartrate and the Affect Adjective Check List ""Now," a state measure, taken during the half hour session believed to be stressful. Results show that the ketamine group was superior to the conventional group, which was superior to the no treatment group in reducing negative affect experienced during stressful situations. Most of the reduction was in depressive affect. The superior results obtained by increasing psychological arousal cannot be accounted for by increased subjective emotional arousal. 13 references. (Author abstract modified)

003684 Turner, Samuel M.; Hersen, Michel; Bellack, Alan S.; Wells, Karen C. Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, PA 15261 **Behavioral treatment of obsessive-compulsive neurosis.** Behaviour Research and Therapy (Oxford). 17(2):95-106, 1979.

Three chronic and severe obsessive-compulsive neurotics were treated with behavioral intervention strategies and psychotropic medication. The effects of treatment were evaluated in three separate experiments with single case experimental designs. Results suggested that response prevention was effective in reducing ritualistic behavior while the effects of flooding and antidepressant medication added little to outcome. Results also suggest that strategies aimed only at reducing compulsive behavior per se are insufficient in eliminating other associated difficulties (e.g.,depressive symptoms, interpersonal problems) and that a comprehensive approach to treatment is needed. 27 references. (Author abstract)

11 DRUG TRIALS IN MISCELLANEOUS DIAGNOSTIC GROUPS

003685 Boiardi, A.; Bussone, G. Neurological Institut, C. Besta, Milan, Italy **Chronic cluster headache: preliminary data of lithium therapy.** Rivista di Patologia Nervosa e Mentale. 99(1):10-13, 1978.

A clinical trial of lithium carbonate was undertaken in a group of 18 outpatients suffering from chronic cluster headache. Blood levels of lithium were determined at regular intervals to monitor the therapeutic dosage. Lithium was found to be an effective prophylactic agent in chronic cluster headache patients. Effectiveness of lithium was evident in less than a week after the beginning of treatment. It is not clear in what way lithium may act in cluster headache. 7 references. (Author abstract modified)

003686 Campbell, Magda; Anderson, Lowell T.; Meier, Mila. Dept. of Psychiatry, New York University Medical Center, New York, NY 10016 **A comparison of haloperidol, behavior therapy, and their interaction in autistic children.** Psychopharmacology Bulletin. 15(2):84-86, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, a comparison of haloperidol, behavior therapy, and their interaction in autistic children is described. The study was a factorial design with two levels of drug (haloperidol vs. placebo) and two levels of language training (response contingent reinforcement and response independent reinforcement). The 40 Ss were rated double-blind by a total of eight independent raters using the Children's Psychiatric Rating Scale, Clinical Global Impressions, and Nurses' Global Impressions. Haloperidol was found to facilitate imitative speech. Cumulative records of words mastered revealed that only the contingent reinforcement group on haloperidol showed a positively accelerated function. 9 references.

003687 Carman, John Scott; Gillin, J. Christian; Murphy, Dennis L.; Weinberger, Daniel R.; Kleinman, Joel E.; Bigelow, Llewellyn B.; Wyatt, Richard Jed. Dept. of Psychiatry, University of Alabama, Medical Center, University Station, Birmingham, AL 35294 **Effects of a selective inhibitor of type A monoamine oxidase -- Lilly 51641 -- on behavior, sleep and circadian rhythms in depressed and schizophrenic patients.** Communications in Psychopharmacology. 2(6):513-523, 1978.

A selectiveinhibitor of type-A monoamine ixidase (MAO) activity, N-(2-chlorophenoxyethyl)-cyclopropylamine, was given for 9-73 days to eight inpatients with primary psychiatric diagnoses. After 2 weeks treatment at daily oral doses exceeding 200mg, this patient group showed a persistcnt mean reduction in plasma amine oxidase activity of greater than 90% and consistent reductions in platelet MAO of up to 25%. The 7 patients receiving the drug for more than 2 weeks exhibited significant mean increases in ratings of agitation or mania, and female patients seemed particularly vulnerable to this effect during the week prior to their menses. Patients with primary affective disorders (one unipolar and one bipolar) had the lowest baseline platelet MAO activities and showed dramatic antidepressant responses to the drug. Two schizoaffective patients showed decreased agitation or increased depression during treatment with daily doses of 50-150mg. The schizophrenic and schizoaffective patients with highest baseline platelet MAO activity were the only two patients whose psychotic behavior increased on the drug. Gross fragmentation of nocturnal sleep and daytime drowsiness were seen in all patients, and the circadian rhythm in body temperature decreased in amplitude during drug treatment. All patients developed postural hypotension on the drug, but this side-effect was managed adequately by dose reduction and temporary bedrest. 32 references. (Author abstract modified)

003688 Castells, Salvador; Chakrabarti, Chhaya; Winsberg, Bertrand G.; Hurwic, Maria; Perel, James M.; Nyhan, William, L. Dept. of Pediatrics, Downstate Medical Center, Brooklyn, NY 11203 **Effects of L-5-hydroxytryptophan on monoamine and amino acids turnover in the Lesch-Nyhan syndrome.** Journal of Autism and Developmental Disorders. 9(1):95-103, 1979.

Examination of a patient with the Lesch-Nyhan syndrome revealed decreased spinal fluid 5-hydroxyindole acetic acid (5-HIAA), the major metabolite of serotonin, and decreased homovanillic acid, the major metabolite of dopamine, indicating a decrease in monoamine metabolism. Administration of 5-hydroxytryptophan and carbidopa produced an increase in spinal fluid 5-HIAA, indicating that it might be possible to correct the serotonin deficiency in this syndrome, but there were no changes in the marked mental retardation and neurological deficits. Self-mutilation appeared to be suppressed by therapy but the effectiveness of the drugs decreased with time. There were also changes in the spinal fluid concentration of amino acids that might affect brain protein synthesis. These changes wre corrected during administration of 5-hydroxtryptophan and carbidopa. 24 references. (Author abstract modified)

003689 Chouinard, Guy; Annable, Lawrence; Ross-Chouinard, Andree; Kropsky, Michael L. Allan Memorial Institute, 1025 Pine Avenue West, Montreal, Quebec H3A 1A1, Canada **Ethopropazine and benztropine in neuroleptic-induced parkinsonism.** Journal of Clinical Psychiatry. 40(3):147-152, 1979.

A 12 week controlled study, in which ethopropazine was compared to benztropine in the treatment of parkinsonism induced by fluphenazine enanthate in 60 schizophrenic outpatients, is described. Ethopropazine and benztropine were found to be equally effective in controlling parkinsonian symptoms and were as efficacious as procyclidine, their previous antiparkinsonian drug. However, benztropine treated patients had a significant increase in tardive dyskinesia compared to their condition during procyclidine treatment, and significantly more anxiety and depression than ethopropazine treated patients. This suggests that benztropine is not the anticholinergic drug of choice in the treatment of neuroleptic-induced parkinsonian symptoms, because of its more toxic central and peripheral atropinic effect. 13 references. (Author abstract)

003690 Clark, A. N. G.; Mankikar, G. D. Geriatric Unit, Brighton General Hospital, Brighton, Sussex, BN2 3EW, England **d-Amphetamine in elderly patients refractory to rehabilitation procedures.** Journal of the American Geriatrics Society. 27(4):174-177, 1979.

The use of d-amphetamine in 88 elderly inpatients who initially failed to respond to rehabilitation procedures is described. These patients exhibited characteristics of the Poor Motivation Syndrome (PMS), not associated with depression or dementia. Patient reactions to d-amphetamine were scored according to mobility, self-care and motivation. Of the 88 patients, 48 improved and another 28 were discharged who would otherwise have remained dependent nursing cases. An unexpected finding was that 17 patients showed an age related resistance to the effects of the drug. Side-effects were in the psychiatric sphere; they occured in 23 patients early in treatment and were not age-related. Thus treatment with d-amphetamine should be restricted to selected patients who satify the diagnostic criteria of PMS, and administration should be carefully supervised. 15 references. (Author abstract modified)

003691 Clarysse, H. J. Heilige Hart Kliniek, Menensteenweg 90, B-8800 Roeselaere, Belgium **Use of bromperidol in psychotic outpatients.** Acta Psychiatrica Belgica (Bruxelles). 78(1):129-133, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, a study of bromperidol in 22 psychotic outpatients is reported. Subjects of ages ranging from 17 to 61 years old with varying diagnoses were treated with bromperidol oral drops for an 8 week period. Tolerability, side-effects, psychopharmacological effects, and optimal dosage were investigated at weeks 1, 2, 4, 6, and 8. Results indicate that bromperidol is a safe and potent neuroleptic agent of polyvalent action which can be administered in one daily dose and is very well tolerated in ambulatory conditions, without antiparkinson drugs, at the doses used. (Author abstract modified)

003692 Conte, R.; Swanson, J. M.; Kinsbourne, M. University of Toronto, Toronto, Ontario, Canada **The effects of stimulant**

medication on cardiac activity during manual tracking in hyperactive children. Psychophysiology. 16(2):181, 1979.

A summary of a paper read at the 18th Annual Meeting of the Society for Psychophysiological Research, held in Madison, September 1978, is presented. The effects of stimulant medication on cardiac activity during manual tracking in hyperactive children was studied in a within subject double-blind experiment, in which both placebo (P) and drug (D) treatments were given to each subject in a single day. Each tracking session consisted of 10, 40 sec trials, preceded by a 20 sec rest period. Cardiac activity recorded during the rest intervals was used as a baseline measure to evaluate the effects of tracking on interbeat interval (IBI) and IBI variability. In a clinical followup, only two thirds of the subjects were found to benefit from the medication. The clinical response of the subjects was incorporated into the design which yielded four groups: responders and nonresponders to medication and P/D and D/P testing orders. There was no change in mean IBI and IBI variability as a result of drug treatment at 2 hours after medication. However, during the placebo testing session of the D/P group, there was a significant increase in IBI and IBI variability relative to morning placebo subjects. Stimulant medication improved tracking performance in all subject groups. (Author abstract modified)

003693 Corsini, G. U.; Del Zompo, M.; Gessa, G. L.; Mangoni, A. Institute of Pharmacology, University of Cagliari Via Porcell 4, I-09100 Cagliari, Italy **Therapeutic efficacy of apomorphine combined with an extracerebral inhibitor of dopamine receptors in Parkinson's disease.** Lancet (London). No. 8123:954-956, 1979.

Apomorphine in combination with a peripheral dopamine receptor blocker (domperidone) was administered to four parkinsonian patients in a double-blind placebo controlled study. The therapeutic efficacy of apmorphine was not reduced by domperidone, while nausea, drowsiness, sedation, and arterial hypothension were prevented. It is suggested that combination of domperidone with dopamine agonists may result in a more effective treatment of Parkinson's disease. 22 references. (Author abstract)

003694 Deberdt, R. Clinic of Psychiatry, Ieper, Belgium **Oxazepam in the treatment of anxiety in children and the elderly.** Acta Psychiatrica Scandinavica. Supplementum 274:104-110, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The treatment of anxiety in children and the elderly with oxazepam is discussed. The nature of anxiety and the difficulty of treating anxiety occurring at the extremes of age are described. The treatment of acute anxiety reactions, anxiety trait, hypochondria, and school phobia in children and neurotic anxiety and predemential and demential states in the elderly are specifically detailed. It is concluded that oxazepam is exceptionally well tolerated by these patients and is considered to be the benzodiazepine of choice for pediatric and geriatric anxiety. Metabolic and pharmacokinetic factors may account for this distinction. 24 references. (Author abstract modified)

003695 Fann, William E. Dept. of Psychiatry, Baylor College of Medicine, Houston, TX 77030 **Assessment and management of anxiety and depression in nursing home populations.** Psychopharmacology Bulletin. 15(2):16-17, 1979.

In a summary of a paper presented at the session on diagnosis and treatment in geriatric psychopharmacology of the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the assessment and management of anxiety and depression in nursing home populations are discussed. In addition to clinical diagnostic techniques, there are several physician and patient self-rating scales which have been shown useful in identifying anxiety and depression in the elderly. The inappropriateness for elderly populations of many diagnostic techniques for identifying anxiety and depression standardized with nonelderly populations is discussed. Behavioral, pharmacological and psychotherapeutic approaches to the treatment of these conditions in the elderly are reviewed.

003696 Fromm, Gerhard H.; Wessel, Henry B.; Glass, Jay D.; Alvin, John D.; Van Horn, Gage. Dept. of Neurology, University of Pittsburgh School of Medicine, 322 Scaife Hall, Pittsburgh, PA 15261 **Imipramine in absence and myoclonic-astatic seizures.** Neurology. 28(9):953-957, 1978.

A double-blind cross-over study with imipramine was conducted in 10 patients with absence and myoclonic astatic seizures who had not responded to conventional medications. Imipramine produced a significant initial decrease in seizure frequency in five of the 10 patients, and in two patients the beneficial effect was maintained for more than 1 year. An open trial of imipramine in another 16 patients showed an initial reduction in seizure frequency in 10 patients which persisted for more than 1 year in four patients. The effect of imipramine on the EEG did not always correlate with the clinical response. Serum content of imipramine in the patients who showed a long-term response was 40 to 120ng per milliliter, on a total daily dose of 0.7to 3.5mg per kilogram. These results suggest that imipramine is a valuable addition to the treatment of seizures. 33 references. (Author abstract)

003697 Gelenberg, Alan J. Harvard Medical School, Erich Lindemann Health Center, Boston, MA 02115 **Choline and lecithin for the treatment of tardive dyskinesia.** Psychopharmacology Bulletin. 15(2):74-75, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, the treatment with choline and lecithin of five male psychiatric outpatients suffering from tardive dyskinesia present from 1 to 5 years is described. Both choline and lecithin at the higher doses were able to significantly increase serum choline levels over pretreatment values. All patients improved on both treatments, although improvement in specific abnormal movements varied. Data suggest that lecithin is at least as effective as choline in suppressing tardive dyskinesia movements in a young, ambulatory population, and it is more acceptable to patients than choline. 9 references.

003698 Goldberg, Solomon C.; Halmi, Katherine A.; Eckert, Elke D.; Casper, Regina C.; Davis, John M. Psychopharmacology Research Branch, NIMH, 5600 Fishers Lane, Rm. 9-105, Rockville, MD 20852 **Cyproheptadine in anorexia nervosa.** British Journal of Psychiatry (London). 134 (January)67-70, 1979.

In three hospitals, 81 female patients satisfying rigorous diagnostic criteria for anorexia nervosa were randomly allocated one of four treatment combinations of cyproheptadine and placebo with behavior therapy and no behavior therapy and the results were assessed. Cyproheptadine was found to be effective in inducing weight gain in a subgroup of anorexia nervosa patients who 1) had a history of birth delivery complications, 2) had lost 41% to 52% weight from norm and 3) had a history of prior outpatient treatment failure. It is suggested that this subgroup may represent a more severe form of anorexia nervosa. 13 references. (Author abstract modified)

003699 Gosenfeld, Lawrence. Brentwood Veterans Administration Hospital, Los Angeles, CA **Treatment of lithium-induced nocturnal enuresis.** Continuing medical education: syllabus and

proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 106).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. A report is offered on patients who, displaying polyuria and polydipsia, developed enuresis without a diabetes-insipidus-like (DI) syndrome. Imipramine was tested in nocturnal enuresis (NE) patients on lithium for prophylaxis of mania. Imipramine also markedly decreased polyuria an polydipsia while causing only slight changes in serum lithium concentration. The physiological mechanisms that may underlie the therapeutic effects of thiazides and imipramine on lithium side-effects; the relation of lithium and those drugs to cyclic-AMP and the enzyme adenyl cyclase; and preliminary date on red cell lithium changes in NE patients in relation to imipramine treatment are discussed. 3 references. (Journal abstract modified)

003700 Greenblatt, D. J.; Allen, M. D.; Locniskar, A.; Shader, R. I. Massachusetts General Hospital, Boston, MA **Age, sex, and diazepam kinetics.** Clinical Pharmacology and Therapeutics. 25(2):227, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Plasma diazepam concentrations were determined in venous blood samples drawn for up to 9 days after a single i.v. dose of 5 or 10mg diazepam in 16 young (26 to 37 years old) and 14 elderly (61 to 84 years old) subjects of both sexes. Diazepam distribution was more extensive in the elderly as a group and in females in both age groups. The elimination half-life was significantly prolonged in the elderly, but was not influenced by sex. The relation of age to total clearance of diazepam depended on sex: age had little effect in females, but clearance was lower in elderly males than in young males. Thus, diazepam kinetics may be influenced as much by sex as by age. (Author abstract modified)

003701 Greenblatt, D. J.; Allen, M. D.; Locniskar, A.; Shader, R. I. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA **Lorazepam kinetics in the elderly.** Clinical Pharmacology and Therapeutics. 25(2):227, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Lorazepam kinetics were determined in 12 young (19 to 32 years old) and 14 elderly (60 to 84 years old) volunteers after single i.v. dose of 1.5-3.0mg. Ten of the elderly Ss also received the same dose orally and by intramuscular injection on separate occasions. Lorazepam distribution was less extensive in elderly than in young Ss. Total clearance in the elderly was reduced by an average of 21% in comparison with the young Ss. Absorption of both intramuscular and oral lorazepam was rapid and nearly complete in the elderly Ss. (Author abstract modified)

003702 Heistad, Gordon T.; Zimmermann, Robert L. University of Minnesota, Minneapolis, MN 55455 **Double-blind assessment of mellaril in a mentally retarded population using detailed evaluations.** Psychopharmacology Bulletin. 5(2):86-88, 1979.

In a summary of a paper presented at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, a double-blind assessment of mellaril (thioridazine) in a mentally retarded population using detailed evaluations is described. Three studies investigating the clinical efficacy of thioridazine and using the Nurses' Observation Scale for Inpatient Evaluation and behavioral time sampling methodology favored thioridazine treatment over placebo. Methodological considerations in drug withdrawal preparatory to evaluation of drug clinical efficacy are discussed. 4 references.

003703 Henker, Barbara; Whalen, Carol K.; Collins, Barry E. Dept. of Psychology, University of California, Los Angeles, CA 90024 **Double-blind and triple-blind assessments of medication and placebo responses in hyperactive children.** Journal of Abnormal Child Psychology. 7(1):1-13, 1979.

Hyperactive boys taking psychostimulant medication were studied using a randomized, placebo controlled, crossover design. Behavior ratings and medication guesstimates were obtained for the boys when they were given methylphenidate (Ritalin) and when they were given a placebo. Ratings showed positive medication related changes and the guesses, done by independent judges, were significantly better than chance. The pattern of ratings for double-blind and triple blind raters was identical. These results imply that positive psychostimulant effects are not attributable to rater sensitization or expectancy. The medication/placebo differences were highly reliable for the group comparisons and were in the predicted direction for 21 of 22 individuals, but the magnitude of the change for many individuals was not dramatic. 21 references. (Author abstract)

003704 Hiscock, Merrill; Kinsbourne, Marcel; Caplan, Bruce; Swanson, James M. Division of Psychology, University Hospital, Saskatoon, Saskatchewan, Canada S7N 0W8 **Auditory attention in hyperactive children: effects of stimulant medication on dichotic listening performance.** Journal of Abnormal Psychology. 88(1):27-32, 1979.

The performance of 20 hyperactive children on a binaural rivalry task was examined, and the effect of stimulant medication on overall performance, asymmetry of performance, and the strategy employed was investigated. The 20 children, between 6 and 16 years old were administered dichotic digits task requiring free report and selective listening. The children received stimulant medication (methylphenidate) before two control sessions. The stimulant did not improve free report performance significantly. Rather, the stimulant facilitated or impaired performance, depending on how it affected the order in which stimuli were reported. Similarly, medication had no effect on overall selective listening performance, but it increased the difficulty of switching attention from one ear to the other. The results of both tasks demonstrate that stimulants may act to maintain selective attention and to inhibit switching. Listening asymmetry (i.e.,right ear superiority) was influenced by task variables but not by the stimulant medication. 25 references. (Author abstract modifed)

003705 Hokendorf, H. Universitats Nervenklinik EMG-Abteilung, Margurg-Lahn, Germany **Combination therapy of extrapyramidal disease with trihexyphenidyl and L-dopa: an electromyographic study with specific reference to tremor.** Journal of International Medical Research (Northampton). 7(1):19-28, 1979.

An electromyographic method was used to study the effect of combination therapy with L-dopa and trihexyphenidyl on tremor in 30 patients suffering from extrapyramidal motor system disease. Tremor activity was measured and documented so that the course of the disease could be followed objectively. L-dopa alone was slightly more effective against tremor than trihexyphenidyl alone. The combination of the two drugs was more effective than either drug used alone, and its side-effects were mild and definitely fewer than had been reported with L-dopa combined with a decarboxylase inhibitor. Good control of tremor with L-dopa and trihexyphenidyl was obtained clinically and verified electromyographically. 12 references. (Author abstract)

003706 Jeste, Dilip V.; Wyatt, Richard Jed. Laboratory of Clinical Psychopharmacology, Div. of Special Mental Health Research, NIMH, St. Elizabeths Hospital, Washington, DC

20032 **In search of treatment for tardive dyskinesia: review of the literature.** Schizophrenia Bulletin. 5(2):251-293, 1979.

Studies on the treatments for neuroleptic-induced tardive dyskinesia published in the English literature until August 1978 are reviewed. Methodological aspects of earlier studies and possibilities for future research in this field are discussed. Suggestions for treatment of individual cases are outlined. It is concluded that there is a general consensus that antiparkinsonian agents (both anticholinergic and dopaminergic in the usual doses for the treatment of parkinsonism) do not help and may even aggravate the symptoms of tardive dyskinesia. 149 references.

003707 Jorgensen, Ole Sylvester. Department of Child Psychiatry, Frederiksborg County Hospital, DK-3400 Hillerod, Denmark **Psychopharmacological treatment of psychotic children: a survey.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(2):229-238, 1979.

Controlled investigations on the psychopharmacological treatment of infantile autism, schizophrenia and manic-depressive psychosis are reviewed in order to discuss the developmental, environmental and ethical problems associated with the treatment of psychotic children. It is contended that children with infantile autism might benefit from psychopharmacological medication when they grow older, e.g. above the age of 7 years. Learning might be facilitated when the psychoactive medication is able to inhibit psychotic preoccupations and idiosyncratic reactions. Schizophrenic and manic-depressive psychoses are rarely seen in childhood. A subgroup of the children with infantile autism might develop schizophrenic symptoms. Schizophrenia and manic-depressive psychosis in children are treated as in adults. Special caution must be paid to the toxic effects of imipramine. 51 references. (Author abstract)

003708 Kaneko, Sunao; Suzuki, Kihachiro; Fukushima, Yutaka; Sato, Tokijiro. Department of Neuropsychiatry, Hirosaki University School of Medicine, Hirosaki, Japan **Study on carbamazepine serum level in epileptic patients treated only with carbamazepine: with special reference to its efficacy and side effects.** Psychiatria et Neurologia Japonica. 80(9):537-560, 1978.

The efficacy and side effects of various carbamazepine serum levels in the treatment of epilepsy were investigated. A total of 26 patients ranging in age from 8 to 64 years were treated with carbamazepine and their serum concentrations were monitored. There was found to exist a range of serum concentrations related to therapeutic effects and neurotoxicity. This range varied according to age. Initial therapeutic concentration was higher than maintenance concentration. Neurotoxicity was indicated by drowsiness, heaviness, diplopia, dizziness, or headache. However, there was no evidence that these side effects were irreversible. 67 references. (Journal abstract modified)

003709 Kehrer, Hans E. Abteilung fur Kinder- und Jugendpsychiatrie, Universitat Munster, Schmeddingstrasse 50, D-4400 Munster, Germany **/Drug treatment of infantile autism./** Die medikamentose Behandlung des kindlichen Autismus. Bibliotheca Psychiatrica (Basel). No. 157:91-97, 1978.

The efficacy of drugs in the treatment of autistic manifestations was examined. The frequent findings of abnormal EEG in infantile autism indicated trials with anticonvulsants. Seventeen autistic children between 4 and 13 years old were given clonazepam for 2 to 12 weeks. Their symptoms included poor contact with peers, restlessness, stereotypy, inadequate eye contact, insistence on rigid habits, eating disorders, unmotivated laughter, mutism, angry outbursts, aggression, and epileptic seizure. The most favorable dose of clonzaepam proved to be between 0.3and 2.5mg, and 4mg in the case of two children aged 11 and 13. Best results were achieved against motor restlessness, eye contact aversion, anger, aggression, senseless laughter, weeping, eating disorders, self-injury, and sleep disturbances. Another trial with amitryptiline showed improvement in speech, contact, weeping, independence, and sleep. Amitryptiline was dispensed for an average of 54 days in dosages between 8 and 36mg per day. Side effects such as aphtha, palpitation, perspiration, nausea, and tremor of the hands were controlled by decreasing the dose. Drugs may remove behavioral excesses from the child's daily routine and may open blocked sensory pathways, however, drugs cannot replace psychotherapy and remedial education.

003710 Kleber, Ronald J. 84 Lacy Street, Marietta, GA 30060 **A double-blind comparative study of desipramine hydrochloride and diazepam in the control of mixed anxiety/depression symptomatology.** Journal of Clinical Psychiatry. 40(4):165-170, 1979.

The comparative therapeutic effects of desipramine hydrochloride and diazepam on the various symptoms of depression and anxiety were examined in 53 psychoneurotic outpatients who manifested moderate to severe depression and anxiety. Patients who received desipramine scored significantly better than diazepam treated patients on 26 variables derived from standard measures of depression and anxiety. Patients who received diazepam scored significantly better on one variable, an item pertaining to sleep. It is concluded that desipramine is more efficacious than diazepam in the treatment of patients with mixed symptoms of anxiety and depression. 17 references. (Author abstract modified)

003711 Kline, Neal A. 3355 Fourth Avenue, San Diego, CA 92103 **Reversal of post-traumatic amnesia with lithium.** Psychosomatics. 20(5):363-364, 1979.

The reversal of posttraumatic amnesia with lithium is examined in a case study of a 26-year-old woman. When subject failed to respond to analgesics and minor tranquilizers, lithium was prescribed, not only as a treatment for headaches, but in an effort to control affective overload and extreme episodic irritability and agitation. After the first week, night terrors and headaches decreased, and after the second week, more daytime calm was noticed. While not discounting the possibility of placebo effect or coincidental symptom change, it is suggested that lithium's thymoleptic mode of action is consistent with the possibility of affective modulation. In this case, the pressure toward dissociation was reduced below a critical threshold and the process reversed. 9 references.

003712 Klorman, Rafael; Salzman, Leonard F.; Pass, Harold L.; Borgstedt, Agneta D.; Dainer, Karen B. Department of Psychology, River Campus, University of Rochester, Rochester, NY 14627 **Effects of methylphenidate on hyperactive children's evoked responses during passive and active attention.** Psychophysiology. 16(1):23-29, 1979.

Eighteen hyperactive clinical responders to methylphenidate were taken off medication and tested in two sessions during which they received an acute dose of methylphenidate and placebo in counterbalanced order. Seventeen normal boys of comparable age were tested without drugs. For both samples, evoked potentials were recorded during a Continuous Performance Test. Normal children made fewer errors of commission and omission and displayed faster reaction times than hyperactives tested under placebo. Under active attention, the late positive component (LPC) of placebo treated hyperactive boys evoked responses exhibited smaller amplitude than normal controls. Methylphenidate increased the amplitude of hyperactive patients LPC and generally ameliorated their performance, especially commission errors and reaction times. Results confirm previous findings of attentional disturbance in hyperactivity and

normalization by methylphenidate of these patients' performance and electrophysiological activity during sustained attention. 19 references. (Author abstract)

003713 Kopelman, P. G.; White, N.; Pilkington, T. R. E.; Jeffcoate, S. L. Dept. of Medicine II, St. George's Hospital, Cranmer Terrace, London SW17 0RE, England **Impaired hypothalamic control of prolactin secretion in massive obesity.** Lancet (London). 1(8119):747-750, 1979.

Intravenous insulin tolerance tests and thyrotropin releasing hormone (TRH) stimulation tests were performed in nine massively obese women and six lean female controls, and the prolactin, growth hormone, and cortisol responses were measured. A combined pituitary function test (insulin, TRH, and gonadotropin releasing hormone) was performed in 11 other massively obese women. In the obese women to whom insulin was given separately, there was no prolactin release, and growth hormone and cortisol responses were impaired. TRH stimulation produced a prolactin response which was subnormal. These changes were not apparent in the obese women in whom a combined pituitary function test was performed. The results suggest an alteration of hypothalamic function in massive obesity. 25 references. (Author abstract)

003714 Krager, John M.; Safer, Daniel; Earhart, Jane. Department of Pediatrics, University of Maryland Medical School, Baltimore, MD 21203 **Follow-up survey results of medication used to treat hyperactive school children.** Journal of School Health. 49(6):317-321, 1979.

A survey was conducted of psychopharmacological treatment of hyperactivity in Baltimore County school children. Most frequently prescribed drugs were found to be methylphenidate, dextroamphetamine, and pemoline. A total of 1,171 children received medication for hyperactivity in 1977, and the percentage of hyperactive children on medication has shown an increasing trend since 1971. Most children were prescribed medication through the family physician. Medication taken at school was administered by the school nurse in 79% of the cases. Possible factors in the medication trends noted are discussed, and the role of the county health department in the treatment of hyperkinetic children is examined. 8 references.

003715 Kramp, Peter; Ronsted, P.; Hansen, T. Department of Psychiatry, Rigshospitalet, 9 Blegdamsvej, DK-2100 Copenhagen 0, Denmark **Barbital and diazepam plasma levels during treatment of delirium tremens.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(3):263-275, 1979.

Plasma concentrations of barbital and diazepam were measured daily during a double-blind study of the efficacy of the two drugs in the treatment of delirium tremens and less severe clinical cases. Treatment was estimated as satisfactory in the majority of cases and only the satisfactory groups are discussed. It is concluded that the two drugs have different modes of action. Barbital may act by its cross-dependence properties with alcohol and thus diminish the withdrawal reaction, whereas diazepam may act by its antianxiety effect (but not in the doses here applied) by cross-dependence with alcohol. Finally, this hypothesis is discussed in relation to clinical experience in the treatment of delirium tremens. 37 references. (Author abstract modified)

003716 Kripke, Daniel F.; Judd, Lewis L.; Hubbard, Bruce; Janowsky, David S.; Huey, Leighton Y. Judd: Dept. of Psychiatry, School of Medicine, University of California at San Diego, La Jolla, CA 92093 **The effect of lithium carbonate on the circadian rhythm of sleep in normal human subjects.** Biological Psychiatry. 14(3):545-548, 1979.

Lithium's effect on the circadian rhythm of sleep in a normal social environment was studied to see if lithium delays circadian rhythms. Sleep reports were gathered from 22 volunteers. A double-blind, randomized, split half cross-over procedure was used. Results indicate that in contrast with the placebo condition, lithium appeared to cause small but significant delays in the sleep/wake circadian rhythm of the subjects, and the sleep/wake phase delay appeared related to lithium's effect upon endogenous biological oscillators, since neither quality nor quantity of sleep and napping were affected. 12 references.

003717 Lake, C. Raymond; Coleman, Michael D.; Ziegler, Michael G.; Murphy, Dennis L. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Fenfluramine and its effects on the sympathetic nervous system in man. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 20 p.

The effects of fenfluramine and amphetamine on plasma norepinephrine (NE) in a group of depressed patients and of fenfluramine in a population of hypertensive patients resistive to diuretic therapy are reported. In the nine depressed patients, supine NE levels were reduced significantly by fenfluramine treatment while the decrement in standing NE values approached significance. Standing blood pressures were also diminished but only the standing diastolic decrement was significant. There were no appreciable weight changes in these depressed patients. Three hours after an acute dose of fenfluramine, supine diastolic blood pressure, and standing plasma NE were evaluated. Amphetamine elevated supine NE and blood pressure. In the 13 patients who received both drugs acutely, amphetamine caused significantly greater increases than fenfluramine in supine plasma NE levels, in supine blood pressure, and standing pulse rate. In the nine obese hypertensive patients initially treated with hydrochlorothiazide (HCTZ), plasma NE levels were strikingly elevated from the drug free state after 2 and 7 weeks of treatment with HCTZ while bodyweight was lowered. After 2 weeks of combination pharmacotherapy (HCTZ and fenfluramine), plasma NE levels and blood pressure were lowered to normal values. 25 references.

003718 Lambert, P.-A.; Wolff, Ph.; de Maximy, B.; Ghenim, A. Hopital de Bassens, Clinique de Bressieux, F-73011 Chambery Cedex, France **/Dimethylaminoethanol in the treatment of tardive dyskinesia induced by neuroleptics./** Le dimethylaminoethanol dans le traitement des dyskinesies tardives induites par les neuroleptiques. Annales Medico-Psychologiques. 136(4):625-629, 1978.

Dimethylaminoethanol was studied in the treatment of tardive dyskinesia induced by neuroleptics. More than 50 patients were given a daily dose of 1904mg of dimethylaminoethanol for an average of 4 months. In no case did chronic dyskinesia disappear while the patient continued to receive large doses of neuroleptics. When the dose of neuroleptics was small, the disturbances decreased or disappeared. When dyskinesia continued after neuroleptic treatment was discontinued, it was easily reduced or eradicated with dimethylaminoethanol. Psycho stimulating effects of dimethylaminoethanol were found. Improvement in general condition was frequent, particularly an increase in appetite and moderate weight gain. Epilepsy occurred in two cases; insomnia was rare. 9 references.

003719 Lieberman, Abraham; Estey, Elihu; Gopinathan, Govindan; Ohashi, Takeo; Sauter, Andre; Goldstein, Menek. Dept. of Neurology, New York University School of Medicine, 566 First Avenue, New York, NY 10016 **Comparative effectiveness of two extracerebral DOPA decarboxylase inhibitors in Parkinson disease.** Neurology. 28(9):964-968, 1978.

In four patients with Parkinson disease, carbidopa combined with levodopa (Sinemet) was compared with benserazide combined with levodopa (Madopar). All of these patients had responded to treatment, first with levodopa and then with Sinemet; after 6 years two continued to show a good response, while two developed marked on/off phenomena. Clinically, Sinemet and Madopar were similar; however, DOPA levels were higher, but with a shorter half-life, on Madopar. The higher DOPA levels may have been offset by the shorter half-life, resulting in no clinical change. DOPA levels were lower and half-life was shorter in patients with on/off phenomena. It is suggested that these differences may be responsible in part for the on/off phenomena. 38 references. (Author abstract)

003720 Lion, John R. no address **The art of medicating psychiatric patients.** Baltimore, Williams & Wilkins, 1978. 158 p. $13.95.

The use of psychotherapeutic drugs in thought disorders, behavior disorders, and affective disorders is discussed. Synopses of representative cases are presented, including significant symptoms and background, therapeutic approach used, consequences of the therapy, and a critique of the therapy. Specific problems, such as when to use liquid medication, the proper time for medication, and differences in handling old and young patients, are considered.

003721 Major, Leslie F.; Lerner, Pauline; Ballenger, James C.; Brown, Gerald L.; Goodwin, Frederick K.; Lovenberg, Walter. Clinical Neuropharmacology Branch, National Institute of Mental Health, Bethesda, MD 20014 **Dopamine-beta-hydroxylase in the cerebrospinal fluid: relationship to disulfiram-induced psychosis.** Biological Psychiatry. 14(2):337-344, 1979.

Cerebrospinal fluid (CSF) dopamine-beta-hydroxylase (DBH) activity in 32 male alcoholics was measured using a modification of the radioenzymatic method of Malinoff et al. In most, CSF was obtained before treatment with disulfiram, while in others it was obtained while they were on the drug. As expected, treatment with this reversible DBH inhibitor had no effect on the activity of the enzyme measured in in vitro assay. However, low pretreatment DBH activity of four individuals who went on to become psychotic on disulfiram was 0.13 plus or minue 0.02 nM/ml per hr. An additional four individuals who developed dysphoric but nonpsychotic reactions had a mean DBH of 0.23 plus or minus 0.03. It is reported that both these values were significantly lower than the mean DBH activity of the remaining 24 individuals treated with disulfiram who had no adverse side-effects, 0.53 plus or minus 0.06, p is less than 0.02 and p is less than 0.05, respectively, 2 tailed t-test. 36 references. (Author abstract)

003722 Melamed, Eldad; Lavy, Sylvan; Cooper, Gerald; Bentin, Shlomo. Laboratory of Cerebrovascular Research, Hadassah University Hospital, Jerusalem, Israel **Regional cerebral blood flow in Parkinsonism: measurement before and after levodopa.** Journal of the Neurological Sciences. 38(3):391-397, 1978.

To evaluate possible effects of dopaminergic stimulation on human cerebral circulation, regional cerebral blood flow was measured by the 133Xenon inhalation technique in 26 patients with Parkinson's disease before and after the chronic oral administration of levodopa combined with a peripheral dopa-decarboxylase inhibitor. Treatment with levodopa did not induce significant alterations in the mean brain, mean hemispheric, or regional flow values in these patients. These findings suggest that the dopaminergic system does not play an important role in modulation of the regional cerebral blood flow in humans. 31 references. (Author abstract modified)

003723 Merikangas, James R.; Reynolds, Charles F., III. Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, PA 15261 **Blepharospasm: successful treatment with clonazepam.** Annals of Neurology. 5(4):401-402, 1979.

Treatment of blepharospasm with clonazepam in a 62-year-old woman is reported. The patient presented with involuntary eye closure, grimacing, retraction of the head on the neck, and spasms of the tongue. The disorder appeared following general anesthesia and surgery when the patient was 53 years old. A variety of other psychopharmacological treatments had proved ineffective. The patient was treated with 1mg clonazepam per day, which was eventually increased to 1mg four times daily. This treatment resulted in the complete disappearance of the blepharospasm and a reduction in involuntary movements of the face, tongue, and neck. Similar treatment in a 41-year-old male has also proven effective. 3 references.

003724 Mindus, P. Karolinska Hospital, Stockholm, Sweden **Some practical aspects of drugs and memory in the elderly.** Bulletin of the British Psychological Society (London). 32(February):81, 1979.

A summary of a paper presented at the International Conference on practical Aspects of Memory, held in Wales, September 1978, is provided. Two Swedish studies were reported to illustrate the practical psychosocial consequences of reduced mental faculties in the elderly -- a formidable problem both qualitatively and quantitatively. A curvilinear relationship between alertness and memory function was discussed in view of clinical practice. Some practical problems in clinical trials with tentative memory enhancing drugs were outlined; and results of a study of mental function in normally aging volunteers were presented. Some limitations to the practical use of potential memory drugs were discussed, together with interesting examples of such drugs based on endogenously produced substances (endomnesics, e.g.,neuropeptides). (Author abstract modified)

003725 Miura, Hisao; Minagawa, Kimio; Kato, Yuzuru; Kaneko, Tsugio. no address **A study of the pharmacokinetics of diphenylhydantoin in epileptic children -- estimations of plasma diphenylhydantoin concentration and urinary diphenylhydantoin, 5-(p-hydroxyphenyl)-5-phenylhydantoin excretion rate.** Acta Paediatrica Japonica. 20(2):55, 1978.

The pharmacokinetics of diphenylhydantoin (DPH) were examined in two samples of epileptic children. Of 33 inpatients, 23 excreted DPH lower than 50% of their total daily dosage as urinary 5-(p-hydroxyphenyl)-5-phenylhydantoin (HPPH), suggesting a usually low DPH level due to poor bioavailability of DPH-acid in many patients. In a group of 176 outpatients, urinary excretion of HPPH was high against the DPH dosage, and the ratio of the urinary output of DPH to HPPH was low, even considering the limiting renal clearance of DPH. In the individual patients, the relation between dose increments and increasing plasma DPH level was not linear. In the outpatient group, an increase in plasma DPH level above the range of 5 to 10 mugrams/ml usually produced an elevation in the urinary DPH to HPPH ratio, suggesting that DPH metabolizing enzyme may be close to saturation within the ordinary therapeutic range of the plasma level. The importance of monitoring plasma concentrations of the drug, particularly in young children, is emphasized. (Journal abstract modified)

003726 no author. no address **Valproic acid calms major seizures but may slow liver, too.** Medical World News. 20(15):28-29, 1979.

A brief overview of the effects of valproic acid is presented the drug's advantages and disadvantages. One study found that seven of 10 patients with myoclonic or myoclonic plus grand-

mal seizures became nearly or completely free of seizures while on an adjunctive regimen of the agent. However, in a retrospective review of 42 epileptics treated with the drug, another study found 27 of 42 had depressed fibrinogen levels. These effects were found to be dose related. A spokesman from Abbott Laboratories said that the drug may be linked to liver failure.

003727 no author. no address **Tricyclics promote chronic-pain relief.** Medical World News. 20(3):56-57, 1979.

Treatment of chronic pain sufferers with tricyclic antidepressants and a subtle program of psychiatric support is reported. Eleven of 12 patients reported reduction of pain to bearable levels when the patients also entered into a treatment program, underwent a brief psychiatric hospitalization during which all other pain medication was withdrawn, and received regular followup care from a psychiatrist. The improvement was highly correlated with what the patient was told to expect. While neither the antidepressant nor the treatment contract was effective alone, it is concluded that tricyclic antidepressants seem to have the ability to decrease discomfort rapidly by activating endorphins or the gate system through an unknown mechanism.

003728 Ostroumova, M. N.; Tsyrlina, Ye. V.; Nuller, Yu. L.; Smirnov, V. M.; Petushkov, Ye. P.; Dil'man, V. M. Nauchno-issledovatel'skiy institut onkologii imeni N. N. Petrova MZ SSSR, Leningrad, USSR **/Age dynamics of regulation in adaptational homeostasis and age pathology./** Vozrastnaya dinamika regulyatsii v adaptatsionnom gomeostate i vozrastnaya patologiya. Fiziologiya Cheloveka. 4(4):629-635, 1978.

Forty healthy subjects and 31 patients suffering from a variety of mental and physical ailments participated in an experiment designed to study the functioning of the hypothalamic complex. It was found that among the healthy subjects, hypothalamic sensitivity to the inhibiting effect of dexamethasone decreases with age. A heightened resistance to dexamethasone was observed in the older patients suffering from such ailments as endogenous depression and arteriosclerosis, i.e.,illnesses whose frequency sharply increases with normal aging. This increased resistance was found to be connected with a deficit of biogenic amino acids in the brain. The use of L-dopa had no effect on hypothalamic sensitivity to dexamethasone, whereas L-tryptophan had a significantly beneficial effect. The antidiabetic preparation phenformin also increased sensitivity to the drug. 33 references. (Journal abstract modified)

003729 Papavasiliou, Paul S.; McDowell, Fletcher H.; Wang, Ying Y.; Rosal, Victoria; Miller, Samuel T. Dept. of Neurology, Cornell University Medical College, New York, NY 10021 **Plasma DOPA and growth hormone in parkinsonism: oscillations in symptoms.** Neurology. 29(2):194-200, 1979.

In 19 patients with Parkinson disease, the relationship of the therapeutic effect of levodopa, or dyskinesia, to the plasma content of DOPA and growth hormone (GH) was investigated. Those patients with stable responses to levodopa, individually or as a group, showed stable and lower plasma DOPA levels than those with unstable symptomatic responses. These results show that stable and oscillating clinical responses in Parkinson disease parallel plasma DOPA levels, suggesting that there are different mechanisms in peripheral levodopa metabolism and that extracerebral mechanisms are important in regulating the availability of levodopa to the brain. Plasma GH did not differ in the two groups, suggesting that the secretion of GH is independent of the effects of levodopa in parkinsonism. 34 references. (Author abstract)

003730 Pires de Oliveira, Roberto Sergio. Servico de Neurologia e Electrencefalografia, Rua 2 no 635, 13,500 Rio Claro, SP, Brazil **/Intravenous mogadon (nitrazepam) in epileptic patients: a clinicoelectroencephalographic study./** Mogadon endovenoso em pacientes epilepticos: estudo clinico-electrencefalografico. Arquivos de Neuro-Psiquiatria (Sao Paulo). 27(1):48-52, 1979.

Mogadon as a parenteral solution was employed for treating 15 cases of status epilepticus 10 cases of intermittent epileptic seizures 14 cases of Lennox syndrome, five cases of myoclonic seizures and six cases of absences. Dosage varied between 3.3mg and 10mg according to individual cases. Status epilepticus and intermittent seizures disappeared following the injection and so did the irritative EEG alterations. Remission was observed in 10 Lennox cases while the remaining four improved. Mogadon abolished myoclonic seizures, in some cases beyond 6 hours. In simple absence improvement was also evident, although more shortlived than in myoclonic seizures. Sleeplessness is reported as a side effect in some cases. 9 references. (Author abstract modified)

003731 Potter, W. Z.; Calil, H.; Zavadil, A., III; Jusko, W.; Sutfin, T.; Rapaport, J. Clinical Psychobiology Branch, NIMH, Bethesda, MD 20014 **Active hydroxylated metabolites of tricyclic antidepressants in man.** Clinical Pharmacology and Therapeutics. 25(2):242, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Steady state concentrations of imipramine (IMI), desipramine (DMI), unconjugated 2-hydroxyimipramine (OH-IMI), and 2-hydroxy-desipramine (OH-DMI) were measured in human plasma. In a group of 20 enuretic boys treated with IMI, the average DMI/IMI ratio was 2.18, and the average OH-DMI/IMI ratio was 1.12. In 21 depressed adult patients treated with IMI, the DMI/IMI ratio was 1.08 and the OH-DMI/IMI ratio was about 0.7. In both children and adults, the steady state unconjugated OH-IMI was relatively low (OH-IMI/IMI, 0.29). In some individuals, the OH-DMI concentration was greater than that of DMI or IMI, indicating that OH-DMI may be the major active drug component in these cases. It is concluded that studies comparing tricyclic antidepressant plasma concentrations should account for the drugs' hydroxylated metabolites. (Author abstract modified)

003732 Rascol, A.; Guiraud, B.; Montastruc, J. L.; David, J; Clanet, M. Department of Neurology, CHU Purpan, F-31052 Toulouse Cedex, France **Long-term treatment of Parkinson's disease with bromocriptine.** Journal of Neurology, Neurosurgery and Psychiatry (London). 42(2):143-150, 1979.

Bromocriptine (15 to 75mg per day) alone or with L-dopa was studied for 5 to 29 months on 44 patients with Parkinson's disease. Used as the sole therapeutic agent, it was found excellent in 12 patients who had never received regular L-dopa treatment either because it was never attempted or because of intolerance from the outset. Its anti-Parkinsonism activity was comparable with L-dopa. The gain was stable in the long-term, and side-effects of L-dopa were not seen after bromocriptine. In cases where L-dopa had ceased to be active, bromocriptine produced a further improvement if mental deterioration was not associated. In very advanced forms of Parkinson's disease with associated dementia, bromocriptine did not produce durable results. Bromocriptine did not improve the on/off effects but reduced a number of the side-effects of L-dopa, in particular cardiac, painful contractions, and dyskinesia without on/off effects. 23 references. (Author abstract)

003733 Rivera-Calimlim, L. Department of Pharmacology, University of Rochester, Rochester, NY **Plasma chlorpromazine concentrations in children.** Clinical Pharmacology and Therapeutics. 25(2):245, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Plasma levels of chlorpromazine (CPZ) were determined in children (7 to 16 years old). Results indicate that children need higher CPZ doses than adults to achieve comparable plasma concentrations, but that the therapeutic optimum plasma concentration is lower in children (40-80ng/ml) than in adults (100-300ng/ml). A decline in plasma drug concentrations was frequently observed in children, despite maintained doses of CPZ. As much as 6-11mg/kg (700mg/day) CPZ, given in three or four divided doses, was tolerated without significant side-effects. Doses lower than 6mg/kg frequently failed to achieve significant plasma CPZ concentrations. (Author abstract modified)

003734 Rothman, Clifton B.; Chusid, Emanuel; Giannini, Margaret J. Mental Retardation Institute, New York Medical College, Fifth Avenue & 106th Street, New York, NY 10029 **Mental retardation: behavior problems and psychotropic drugs.** New York State Journal of Medicine. 79(5):709-715, 1979.

The current management of behavior problems in mental retardation is reviewed from a pediatric viewpoint. The modalities employed in the treatment of children and adults in the inpatient and outpatient department of the Mental Retardation Institute of New York Medical College are detailed, with particular emphasis on the use of psychotropic drugs. Present efforts in the field of mental retardation are directed at enabling the retardate to live at home with his family, and towards providing comprehensive support facilities within the community. Recent regulations require the resettlement of retarded residents from large institutions into small group homes. In order that this plan succeed, satisfactory standards of social behavior must be maintained by residents of these homes. Support services provide counseling, psychotherapy where applicable, behavior modification, and psychopharmacologic medication. Psychotropic drugs may be used to bring about sedation. Haloperidol has been successfully used in mentally retarded hyperactive patients to improve social behavior and concentration while diminishing agitation. Stimulant drugs may increase attention span and thus improve learning in some children with minimal brain dysfunction. 23 references.

003735 Savoldi, F.; Nappi, G.; Bono, G. Neurological Clinic, University of Pavia, Pavia, Italy **Lithium salts in treatment of idiopathic headaches and of facial pain syndromes.** Rivista di Patologia Nervosa e Mentale. 99(1):4-9, 1978.

The therapeutic response of lithium prophylaxis and treatment in cluster headache and other facial pains were investigated. Subjects were 12 patients with chronic or episodic cluster headache, 9 with facial neuralgic-vasomotor syndromes, and 3 with severe chronic headache. The daily dose of lithium carbonate ranged from 900 to 1500mg. The duration of treatment varied from 2 months to a maximum of 18 months. Side-effects were mild and disappeared after minimal decreases of the daily dose. Percent improvement was significant in all cases. 10 references. (Author abstract modified)

003736 Schachter, M.; Price, P. A.; Parkes, J. D. University Department of Neurology, King's College Hospital, London SE5, England **Deprenyl in narcolepsy.** Lancet (London). No. 8120:831-832, 1979.

In a letter to the editor, the use of deprenyl in the treatment of narcolepsy and cataplexy was studied in 12 patients, all but one of whom were receiving treatment with various combinations of d-amphetamine, ephedrine, and clomipramine. Each patient recorded the severity of attacks on a self-rating scale for 2 weeks on their existing treatment, for 1 week on no drugs, and for 2 weeks on deprenyl (5mg orally) twice daily with no other treatment. Results show that deprenyl had no detectable therapeutic action in any of the patients. Frequent daytime sleep attacks occurred in every subject, subjective assessment of alertness was unaffected, and the accessory symptoms of cataplexy, sleep paralysis, and hypnagogic hallucinations were not influenced. The failure of deprenyl to increase alertness in narcoleptics or to improve cataplexy implies that dopamine is not important in the regulation of the sleep/waking cycle or loss of muscle tone in these patients. 10 references.

003737 Schentag, J. J.; Cerra, F. B.; Bernhard, H.; Berg, M. J. Department of Pharmaceutics, School of Pharmacy, State University of New York, Buffalo, NY **Analysis of cimetidine-treated patients with and without mental confusion.** Clinical Pharmacology and Therapeutics. 25(2):248, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Trough concentrations and mental status (MS) were assessed daily in 36 intensive care patients treated with the histamine H1 receptor antagonist, cimetidine (C). MS changes were found almost exclusively in patients with significantly elevated C-trough concentrations (above 1.25mcg/ml). The MS changes and high C-trough concentrations were observed primarily in patients with impaired renal and metabolic function, given more than 600mg C a day. Patients with impaired renal and metabolic function given 300mg/day C or less did not show MS changes. Results indicate that C related changes in MS are dose related and should be expected in patients with impaired excretory mechanisms. (Author abstract modified)

003738 Schmatolla, E. Psychiatrische Klinik, D-6228 Eichberg, Germany **Interim report: high dosage bromperidol therapy of delirium tremens.** Acta Psychiatrica Belgica (Bruxelles). 78(1):180-187, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, a study of high dosage bromperidol therapy of delirium tremens is reported. Subjects, 10 males with alcohol-induced delirium tremens, were administered an intravenous solution of 20 to 120mg bromperidol per day until symptom severity decreased, followed by 30mg/day orally until symptoms were absent. All 10 patients survived without complications of the illness or side-effects of therapy. High doses of haloperidol had a gradual effect on the 10 target symptoms. The drug was particularly effective in controlling hallucinatory phenomena, but was rather less effective in controlling excitement and restlessness. No patients were oversedated. Supplementary sedative medication was only rarely needed. 6 references. (Author abstract modified)

003739 Shekim, Walid O.; Dekirmenjian, Harutoune; Chapel, James L. Dept. of Psychiatry, University of Missouri Medical Center, Columbia, MO **The urinary excretion of 3-methoxy-4-hydroxyphenylglycol in minimal brain dysfunction and its modification by dextro-amphetamine.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 157-158).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The excretion of 3-methoxy-4-hydroxyphenylglycol (MHPG) was examined in 15 children with hyperactivity at base line and during the administration of 0.5mg/kg d-amphetamine daily for 2 weeks. The hyperactive children excreted lower levels of MHPG than 13 healthy controls. Clinical improvement in the drug responders was associated wit greater reduction in MHPG levels than the reduction in the nondrug re-

sponders. It is concluded that this greater decrement in MHPG levels in the drug responders may suggest a relationship between the action of d-amphetamine on norepinephrine metabolism and clinical improvement. 2 references. (Journal abstract modified)

003740 Signoret, J. L.; Whiteley, A. Hospital de la Salpetriere, Paris, France **The influence of oral choline on the amnesia of Alzheimer's disease.** Bulletin of the British Psychological Society (London). 32:111, 1979.

A summary of a paper read at the International Conference on Practical Aspects of Memory is provided. Patients who had a clinical diagnosis of Alzheimer's disease with a marked amnesic state but with little intellectual impairment and with no aphasia were given choline. Two series of psychological tests were administered, one before and one after choline treatment. The results show that after choline there was some improvement in free recall. Three patients who had the least severe amnesia were most helped by choline on this test and noted a subjective improvement in their memory. Manual motor learning tests showed improved performances. There was a slight improvement on the delayed recall test after choline. There was no improvement on verbal fluency or ordering of numbers and there was a slight improvement of progressive matrices. The choline produced no major side-effects, just minor gastrointestinal upsets and a fishy odor. (Journal abstract modified)

003741 Tanaka, Harumi; Suzuki, Kunihiko. Suzuki: Dept. of Neurology, Rose F. Kennedy Center, Albert Einstein College of Medicine, Bronx, NY 10461 **Globoid cell leukodystrophy (Krabbe's disease): metabolic studies with cultured fibroblasts.** Journal of the Neurological Sciences. 38(3):409-419, 1978.

Metabolism of tritium labelled galactosylceramide and lactosylceramide added to the culture medium was examined in cultured skin fibroblasts from four control individuals. The uptake of labelled galactosylceramide and labelled lactosylceramide by the fibroblasts continued actively at least up to 3 days. Approximately 30% to 40% of the galactosylceramide, which had been taken up, was released subsequently from the cells in a 4 day period. The GLD fibroblasts showed no abnormality in the kinetics of the uptake and in the release of these glycosphingolipids which are natural substrates of the beta-galactosidase genetically deficient in the disorder. This finding differs from that reported for fibroblasts from patients with metachromatic leukodystrophy, which showed abnormal accumulation and retention of sulfatide added to the culture media. However, degradation of added galactosylceramide to labelled galactose by the GLD fibroblasts was only 25% of the control cells, while lactosylceramide was degraded at 70% of the normal rate. These findings are consistent with the known substrate specificities of the two acidic beta-galactosidases in human tissues; galactosylceramide is hydrolyzed almost exclusively by galactosylceramidase, while lactosylceramide can be hydrolyzed by both galactosylceramidase and GM1-ganglioside beta-galactosidase. 24 references. (Author abstract)

003742 Tolosa, Eduardo S. Box 468, Mayo, University of Minnesota Hospitals, Minneapolis, MN 55455 **Parkinson's disease, Huntington's disease, and tardive dyskinesia.** Minnesota Medicine. 62(2):101-106, 1979.

In a paper presented at a Symposium on 25 Years of Psychopharmacology, in June 1977, in Minneapolis, the neurochemical pathology and pharmacology fo two disorders of the basal ganglia, Parkinson's disease and Huntington's disease, and of the neuroleptic-induced extrapyramidal syndrome tardive dyskinesia are reviewed. Treatment of Parkinson's disease is primarily directed towards enhancing dopaminergic transmission with levodopa and with dopamine agonists. The chorea of Huntington's disease and tardive dyskinesia improve with drugs which reduce brain dopamine transmission. It is hoped in these disorders that gabamimetic and cholinomimetic agents, and paradoxically also dopamine agonists, will result in useful symptomatic treatment. 14 references. (Author abstract modified)

003743 Tomson, G.; Lunell, N.-O.; Sundwall, A.; Rane, A. Department of Clinical Pharmacology, Karolinska Institute, Huddinge University Hospital, S-141 86 Huddinge, Sweden **Pharmacokinetics of oxazepam given during labour.** Acta Psychiatrica Scandinavica. Supplementum 274:75-81, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The transfer across the placenta and the maternal and neonatal kinetics of oxazepam and its conjugate was studied in 12 patients and their newborns. Oxazepam was readily absorbed and peak plasma concentrations were similar to those in healthy nonpregnant volunteers. When meperidine was given within 1 hour of the dose of oxazepam the absorption was delayed but the bioavailability did not decrease. In the newborns the umbilical vein plasma concentration of oxazepam usually exceeded that of the conjugate. The reverse was true for all subsequent plasma samples from the newborn. The half-life of oxazepam in the newborn averaged 22 hours as compared to 6.5hours in the mothers. A significant rise of the plasma concentration of oxazepam conjugate was noted in three newborns during the first 6 to 19 hours of extrauterine life. It is concluded that the newborn is able to conjugate oxazepam. The Apgar score values were normal. 27 references. (Author abstract)

003744 Trueblood, B.; Judson, B. A.; Goldstein, A. Addiction Research Foundation, Palo Alto, CA **Acceptability of methadyl acetate (LAAM) as compared with methadone in a treatment program for heroin addicts.** Drug Alcohol Dependency. 3:125-132, 1978.

The effects of methadyl acetate (LAAM) and methadone were compared as to significant characteristics in heroin dependent subjects who had participated for at least 3 months in the drug treatment program. Results indicate that the differences were highly significant and not dependent on effects of social desirability. In the majority of the patients LAAM brought about an intensive heroin blockade which effectively reduced heroin craving, and the actual need for heroin in the LAAM treatment appeared to be significantly lower than in the methadone treatment. With regard to other criteria such as sleep, sexual behavior, and appetite no significant differences appeared among treatments. The results seem to indicate that for most heroin addicts LAAM appears to be an acceptable long-term drug. (Journal abstract modified)

003745 Tu, Jun-bi; Smith, J. Terry. Ongwanada Hospital, Penrose Division, 752 King Street West, Kingston, Ontario, Canada K7L 4X3 **Factors associated with psychotropic medication in mental retardation facilities.** Comprehensive Psychiatry. 20(3):289-295, 1979.

Demographic and clinical factors related to the administration of psychotropic drugs among 2158 mentally retarded residents of five institutions are examined. Log linear models for multiway frequency tables were used to reveal associations among variables relating to the rate and number of drugs used. Sex, clinical diagnosis, and size of institution are identified as important variables associated with the prescription of medication. The use of polypharmacy is associated with therapeutic response in different directions for different ages. It is concluded that two distinct mechanisms are involved in the excessive use

of psychotropic drugs: the rate of medication is related to population characteristics, whereas use of polypharmacy does not depend on demographic factors or clinical diagnosis. 20 references. (Author abstract modified)

003746 Wheatley, David. 325 Staines Rd., Twickenham, TW2 5AX, England **Clorazepate in the management of coronary disease.** Psychosomatics. 20(3):195, 198-199, 203-205, 1979.

Patients who had suffered their first myocardial infarction were divided into two groups and a double-blind comparison made between them. One group was treated with chlorazepate and the other with a placebo for 3 months. It was found that the mean anginal attack rate and mean nitroglycerin requirement were less in patients treated with chlorazepate than in those treated with the placebo. Findings of a greater reduction in mean blood pressure with chlorazepate and a significant reduction in both groups of anxiety symptoms are reported. 11 references. (Author abstract modified)

003747 Wilkinson, G. R. Department of Pharmacology, Vanderbilt University, School of Medicine, Nashville, TN 37232 **The effects of liver disease and aging on the disposition of diazepam, chlordiazepoxide, oxazepam and lorazepam in man.** Acta Psychiatrica Scandinavica. Supplementum 274:56-74, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The disposition of a number of benzodiazepines was investigated with respect to the effects of aging and liver disease on the involved processes. Considerable differences existed between the drugs when studied in a group of young and old individuals aged usually below 30 and above 60 years. With diazepam and chlordiazepoxide aging leads to a three fold to six fold prolongation in the elimination half-life from about 20-30 hours to 60-80 hours and 6-8 hours to 30-36 hours, respectively. In both cases this involves an age related increase in the distribution volume, but in addition the plasma clearance of chlordiazepoxide decreases about three fold. In contrast, the removal of both oxazepam and lorazepam from the body, appears to be unaffected by aging. Similar differences between these drugs also existed with respect to the effects of liver disease on their disposition. The aging process and liver disease, therefore, affect the disposition of these closely related benzodiazepines quite differently. It is concluded that the fact that the pharmacokinetics of benzodiazepines which are eliminated by glucuronidation are relatively unaffected by the investigated disease processes suggests that they may be more clinically advantageous than perhaps similar drugs which are oxidatively metabolized. 38 references. (Author abstract modified)

003748 Wilson, Lawrence G. Dept. of Psychiatry and Behavioral Sciences, RP-10, University of Washington School of Medicine, Seattle, WA 98195 **Cross-cultural differences in indicators of improvement from psychosis: the case of betel nut chewing.** Journal of Nervous and Mental Disease. 167(4):250-251, 1979.

Practical difficulties encountered by the psychiatrist working in a foreign culture in assessing psychosis and its treatment are examined. A 39-year-old woman from the Micronesian Island of Yap was evaluated by a psychiatrist and found to have been psychotic for several years, suffering from gross delusions, auditory hallucinations, flattened affect, and social isolation. In addition, she had discontinued chewing betel nut, which is used daily by virtually all of her fellow islanders on Yap. Two months after beginning treatment with twice monthly injectable antipsychotic medication she was still delusional, with flat affect, and heard the same voices. She was less socially withdrawn and had resumed chewing betel nut. In this culture, betel chewing is a main avenue of social intercourse and an intrinsic part of almost all social activities. In her case, the resumption of betel chewing was a primary indicator of her improvement from psychosis and reintegration into her social group. 1 reference. (Author abstract modified)

003749 Yaryura-Tobias, J. A. Division of Research, North Nassau Mental Health Center, 1691 Northern Blvd., Manhasset, NY 11030 **Gilles de la Tourette syndrome: interactions with other neuropsychiatric disorders.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(1):9-16, 1979.

Two unique case histories of sufferers from Gilles de la Tourette syndrome are described and discussed, under the hypothesis that the syndrome is a form of obsessive-compulsive disorder. One case had an intercurrent history of primary anorexia nervosa and the other a history of rheumatic encephalitis. They were successfully treated, the former with chlorimipramine, and the latter with a combination of L-tryptophan, nicotinic acid, and pyridoxine HCl. These cases are reported to illustrate the possibility that one neuropsychiatric syndrome may induce another during its evolution when the same anatomo-biochemical loci of the brain are involved. 58 references. (Author abstract modified)

003750 Yokochi, Masayuki; Kondo, Tomoyoshi; Hirayama, Keizo; Narabayashi, Hirotaro; Kuruma, Isamu. Department of Neurology, Juntendo University, Tokyo, Japan **Comparative studies of L-dopa alone and combination with a peripheral dopa decarboxylase inhibitor, HCL-benserazide, on Parkinson's disease -- Part I: clinical aspects.** Brain and Nerve (Tokyo). 31(3):295-304, 1979.

The effectiveness of L-dopa and Madopar in the treatment of Parkinson's disease was examined in 25 patients. The mean maintenance dose of L-dopa was 2100700mg/day in L-dopa treatment and 418173mg/day in Madopar treatment. Results show greater improvement in rigidity, tremor, akinesia, and ADL disturbance with the MADOPAR treatment. Thirty-two percent of patients receiving L-dopa treatment complained of nausea compared to 8% in the Madopar group. The Global Utility Rating was superior for 13 cases of Madopar treatment, eight cases showed equal ratings, and L-dopa treatment was superior in four cases. Results suggest treatment with Madopar is superior to that with L-dopa in the management of Parkinson's disease. 29 references. (Journal abstract modified)

003751 Zahn, T. P.; Rapoport, J. L.; Thompson, C. L. National Institute of Mental Health, 5600 Fishers Lane, Rockville, MD 20857 **Autonomic and behavioral effects of dextroamphetamine in normal and hyperactive prepubertal boys.** Psychophysiology. 16(2):186, 1979.

A summary of a paper read at the 18th Annual Meeting of the Society for Psychophysiological Research, held in Madison, September 1978, is presented. To test the specificity of the effects of stimulant drugs on the behavior and autonomic activity, the effects of a single 5mg/kg oral dose of dextroamphetamine was compared with placebo in 14 normal (N) and 15 hyperactive (H) boys, using a double-blind crossover design. Skin conductance (SC) and heartrate (HR) were recorded during a 3 min rest period. Motor activity was reduced on amphetamine, and reaction time (RT) was faster on the drug in both groups, compared to placebo. Amphetamine increased HR for both groups in all test phases, but SC level was unchanged. SCR activity was reduced on drug for each group, but in different parts of the procedure. Results suggested that reported paradoxical effects of stimulant drugs in H children are not specific to those children, but occur in N children as well. (Author abstract modified)

003752 Zavodnick, Steven. Dept. of Psychiatry, Pennsylvania Hospital, 8th and Spruce Streets, Philadelphia, PA 19107 **Treating acutely psychotic patients with high doses of neuroleptic drugs.** Hospital & Community Psychiatry. 30(4):229, 233, 1979.

The treatment of acutely psychotic patients with high doses of neuroleptic drugs in a 20 bed closed psychiatric unit is described. In reviewing the case records of 681 patients treated with neuroleptics, 31, or 4.5% were treated during 35 admissions with 42 courses of high dose therapy. The therapy ranged from 5 days to 6 weeks. Drugs used included haloperidol, 100 to 350mg; fluphenazine, 100 to 180mg; chlorpromazine, 2000 to 4000mg; thiothixene, 100 to 225mg; and trifluoperazine, 100 to 120mg. No remarkable benefits from high dose neuroleptic treatment were observed; results are no better than expected from conventional chemotherapy. Extrapyramidal symptoms were no more severe on the high dose regimens than from conventional chemotherapy. 11 references.

12 PSYCHOTOMIMETIC EVALUATION STUDIES

003753 Natale, Michael; Dahlberg, Charles Clay; Jaffe, Joseph. Dept. of Psychology, University of Pennsylvania, 3813 Walnut St., Philadelphia, PA 19104 **The effects of LSD-25 and dextroamphetamine on the use of defensive language.** Journal of Clinical Psychology. 35(2):250-254, 1979.

To determine whether psychotomimetics attenuate verbal defense mechanisms, 5 min monologues of seven neurotic depressives who participated in a project which examined the effects of LSD and dextroamphetamine on timing aspects of speech were reanalyzed. Dosages were subhallucinatory: 15 to 25mg dextroamphetamine, 50 to 100mg LSD, and a matching placebo. Volunteers received each drug seven or eight times on a random schedule over a 1.5year period; there was a 3 week intertrial interval. The patient provided 5 min monologues, both before and after drug effects, which were transcribed and scored for formal measures of defensive language. Results indicate that LSD causes individuals to make more personal statements and to use explanation and evaluations less often. Dextroamphetamine was shown to decrease the use of nonpersonal references. 21 references. (Author abstract modified)

13 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

003754 Baldessarini, Ross J. Mailman Research Center, 115 Mill St., Belmont MA 02178 **The ""neuroleptic" antipsychotic drugs: 1. Mechanisms of action.** Postgraduate Medicine. 65(4):108-111, 114-117, 119, 1979.

Important neurotoxic actions associated with neuroleptic agents (agents that produce symptoms resembling neurologic disease) are discussed. These agents have a strong and selective antagonistic action on synaptic mechanisms in the brain mediated by dopamine as a neurotransmitter. This antidopamine action contributes importantly to their parkinsonism effect (basal ganglia) and their prolactin elevating (hypothalamic) effect; in addition, antipsychotic actions may be mediated by antidopamine effects, possibly in limbic and other forebrain centers. (Author abstract modified)

003755 Belmaker, Robert H.; Lehrer, Rachel; Ebstein, Richard P.; Lettik, Haya; Kugelmass, Sol. Jerusalem Mental Health Center-Ezrath Nashim, P.O.B. 140, Jerusalem, Israel **A possible cardiovascular effect of lithium.** American Journal of Psychiatry. 136(4B):577-579, 1979.

Heartrate rises associated with performance of mental arithmetic tasks were compared in 22 euthymic manic-depressive patients receiving lithium carbonate and 17 drug free normal controls. The lithium treated Ss showed a markedly lower heartrate response to the mental arithmetic stimulus. No effect was observed on basal heartrate. The results are consistent with lithium's report inhibition of basal adenylate cyclase activity. The biochemical and psychophysiological findings may parallel lithium's unique ability to calm excited behavior without sedating normal behavior. 17 references. (Author abstract)

003756 Brambilla, Francesca; Resele, Leonardo; De Maio, Domenico; Nobile, Paola. Clinica Psichiatrica dell'Universita, Via Besta 1, Milano Affori, Italy **Gonadotropin response to synthetic gonadotropin hormone-releasing hormone (GnRH) in heroin addicts.** American Journal of Psychiatry. 136(3):314-317, 1979.

To determine whether the pituitary/gonadal deficiency in heroin addicts is related to heroin's effect on the hypothalamus, gonadotropin hormone releasing hormone (GnRH) was administered to 10 male heroin addicts and five control Ss and the follicle stimulating hormone (FSH) and luteinizing hormone (LH) responses were measured. Basal FSH and LH levels were significantly lower in addicts; after GnRH stimulation, the addicts' FSH and LH values increased but not significantly compared to controls. The difference between the two groups' response was highly significant. It is suggested that heroin causes an incomplete blocking of gonadotropin secretion at the pituitary level, inducing a hypophyseal/gonadal deficiency and a long lasting depletion of the endogenous releasing factor, which accounts for the reduced response to GnRH. 21 references. (Author abstract modified)

003757 Breyer-Pfaff, U.; Ewert, M.; Wiatr, R. Institut fur Toxikologie der Universitat Tubingen, Wilhelmstr. 56, D-7400 Tubingen, Germany **Comparative single-dose kinetics of amitriptyline and its N-oxide in a volunteer.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1916-1920, 1978.

Plasma drug levels and urinary metabolites were measured in a volunteer for 28 h after ingestion of amitriptyline hydrochloride or amitriptylinoxide equivalent to 100mg of amitriptyline base. The N-oxide initially produced high plasma levels, and 15% of the dose was excreted unchanged within 14 h. From comparison of the metabolite excretions, it is concluded that about 70% of the dose was reduced at the N-oxide group, while comparison of the areas under the plasma level time curves for amitriptyline pointed to a 55% reduction to the amine. Less drowsiness was experienced after ingesting the N-oxide, and there was no depressive mood. 17 references. (Author abstract)

003758 Brown, Walter Armin; Johnston, Robert; Mayfield, Demmie. Neuroendocrine Research Laboratory, Providence V.A. Hospital Davis Park, Providence, RI 02908 **The 24-hour dexamethasone suppression test in a clinical setting: relationship to diagnosis, symptoms, and response to treatment.** American Journal of Psychiatry. 136(4B):543-547, 1979.

In an investigation of the 24 hour dexamethasone suppression test (DST) as a marker of a subtype of depressive disorder, 54 male psychiatric patients with various psychiatric diagnoses were observed following dexamethasone administration. Forty percent of Ss with a major depressive disorder showed escape from suppression over the 24 hours, while all of the patients with schizophrenia, neurosis, alcoholism, and drug abuse showed normal pituitary/adrenal suppression. Only 10% of the depressed patients showed resistance to suppression 8 hours after dexamethasone administration. There was no difference between depressed patients who did and did not escape from suppression in type of previous episodes, family history, symptoms, or medication. However, those who showed escape tended to respond better to treatment and to be rated as having a more severe depression. 18 references. (Author abstract modified)

003759 Clementi, W. A.; Ludden, T. M.; Evens, R. P.; Bowden, C. Department of Pharmacology, University of Texas Health Science Center, San Antonio, TX **The effect of sodium on the bioavailability of lithium.** Clinical Pharmacology and Therapeutics. 25(2):217-218, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. In a study of the effect of sodium on the bioavailability of lithium (L), five healthy volunteers received L-capsules (16.2mEq) concomitantly with either a high sodium (HNa) meal (131mEq) or a low sodium meal (23.5mEq). The total daily intake was equivalent for the two groups (240mEq). The area under the serum level/time curve and time to peak serum concentration did not differ significantly between groups. The renal clearance of L and the percent of the dose excreted did not differ significantly between groups, but a tendency toward enhanced renal elimination was observed in the HNa group. It is concluded that sodium does not alter the bioavailability of L. (Author abstract modified)

003760 Cloutier, G.; Harris, W.; Starbuck, R.; Rogers J. Wellcome Research Laboratories, Research Triangle Park, NC **The effect of tranylcypromine isomers on the activity of platelet monoamine oxidase in man.** Clinical Pharmacology and Therapeutics. 25(2):218, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. The effects of the antidepressant monoamine oxidase (MAO) inhibitor ()-tranylcypromine ((-)-TCP) and its levo isomer (-)-TCP were compared in 43 normal volunteers during and after a chronic dosing period of 21 days. Oral treatments of 15 or 30mg/day of (-)-TCP or of 30mg/day ()-TCP produced 84-92% inhibition of blood platelet MAO. Plasma levels were comparable between treatments. Drowsiness, dry mouth, headache, dizziness, diarrhea, nausea, anorexia, and vomiting were observed in both groups. It is concluded that (-)-TCP and ()-TCP both exhibit substantial MAO inhibition, and that the risk/benefit ratio for the two drugs is similar. (Author abstract modified)

003761 Cumpelik, O.; Paulus, M. Institut fur Toxikologie und Bochemie, Gesellschaft fur Strahlen- u. Umweltforschung, Ingolstadter Landstrasse 1, D-8042 Nuremberg, Germany **Inhibition of mitochondrial monoamine oxidase by cadmium and copper.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R23, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of cadmium and copper on type-A and type-B mitochondrial monoamine oxidase (MAO) in brain and liver are reported. Increasing concentrations of cadmium or copper resulted in a simple sigmoid inhibition curve for both type-A and type-B MAO, with copper being the more potent inhibitor. Results suggest that the protein moeities of the two isoenzymes may be identical, in that they may contain similar functionally important ligands that can be blocked by heavy metals. Since cadmium and copper are nonspecific inhibitors of MAO, it is suggested that contamination with these heavy metals may interfere with the selective MAO inhibitor drugs that are currently used in therapy. (Author abstract modified)

003762 Cutler, R. E.; Blair, A. D. Division of Nephrology, University of Washington School of Medicine, Seattle, WA **Pharmacokinetics of diazepam in normal and uremic humans.** Clinical Pharmacology and Therapeutics. 25(2):219-220, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Five healthy subjects and five patients receiving chronic hemodialysis were given 10mg diazepam orally (PO) and as a 3 minute intravenous (IV) infusion in a crossover trial. Concentrations of toluene extractable diazepam were measured by gas chromatography in multiple serum samples over a 48 hour interval following each dose. The mean pharmacokinetic parameters after IV infusion in normal subjects were: peak serum level, 747mcg/L; total volume of distribution, 0.74/kg; total clearance, 40ml/minute; elimination half-life, 18 hours. Pharmacokinetic parameters after IV infusion in hemodialysis patients were: peak serum level, 272mcg/L; total volume of distribution, 2.18L/kg; total clearance, 116ml/minute; elimination half-life, 21 hours. Excellent systemic bioavailability of the PO dose was suggested by a similar area under the serum level/time curve in both subject groups. When the IV infusion was repeated after 4 week treatment with diazepam (10mg/day PO), no significant change in any pharmacokinetic parameter was observed. 1 reference. (Author abstract modified)

003763 Da Prada, M.; Kettler, R.; Haefely, W. E. Pharmacology Research Department, F. Hoffmann-La Roche Co., Ltd., CH-4002 Basel, Switzerland **Effect of benserazide and carbidopa on the concentration of endogenous DOPA in human and rat plasma.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R61, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effects of benserazide and carbidopa on the concentration of endogenous DOPA in human and rat plasma are reported. Oral administration of 1.5mg/kg benserazide increased by about 10 fold the concentration of DOPA in rat and human plasma 3 hours after drug administration; plasma DOPA levels were significantly elevated within 15-3 minutes and remained high even 24 hours after DOPA decarboxylase (DDC) inhibition, with no change in plasma catecholamines. Oral carbidopa increased the basal concentration of DOPA in rat and human plasma by about 4 fold. At doses that inhibited peripheral DDC by 50%, both drugs inhibited cerebral DDC by only 10-30%. 1 reference. (Author abstract modified)

003764 Davis, John M. Illinois State Psychiatric Institute, Chicago, IL **Pharmacotherapy of depression: laboratory methods.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 166).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The scientific evidence on the relationship between plasma levels of tricyclic antidepressants and the occurance of both clinical improvement and side-effects in the treatment of depression are reviewed. The evidence relating response to monoamine oxidase inhibitors to platelet monamine oxidase enzyme activity and acetylator status is analyzed. The clinical pharmacology of both classes of agents is considered as it relates to problems occurring in the clinical use of the agents. (Journal abstract modified)

003765 Dorus, Elizabeth. Dept. of Psychiatry, University of Chicago, Chicago, IL 60637 **Genetic control of lithium transport.** Continuing medical education: syllabus and proceedings in smmary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 105).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Using the twin study method, evidence is provided that genetic factors contribute to interindividual vari-

ability in distribution of lithium transport in pedigrees is reported. Lithium transport in first degree relatives of four patients with affective disorders evidencing a lithium-sodium counterflow deficiency associated with a high lithium ratio was also examined. Data indicate that counterflow deficiencies are genetically transmitted, although the mode of transmission and the relationship to the presence or absence of affective illness remain unknown. (Journal abstract modified)

003766 Dross, K.; Hetzler, J. Institut fur Hirnforschung der Universitat Dusseldorf, Moorenstrasse 5, Gebaude 22.03.05, D-4000 Dusseldorf, Germany **Biphasic kinetics of sulpiride in serum: a result of accumulation in muscle tissue.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307 (Supplement):R2, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the kinetics of sulpiride (SP), a noncataleptogenic neuroleptic and antidepressant, are discussed. SP exhibited biphasic serum kinetics in rats, rabbits, dogs, and humans. Biphasic kinetics were also found in liver, lungs, kidney, and spleen. Skeletal muscle showed monophasic decline of SP. Maximum levels in muscle were attained later and were 3 to.5-fold lower than in other tissues, but 4 hours after injection of 20mg/kg SP, the highest drug levels were found in muscle. These results indicate that muscle acts as a deep compartment in SP kinetics. The serum and tissue kinetics of sultopride (ST) were also determined. ST differs from SP in the substitution of sulfamoyl by sulfethyl and possessed monophasic serum kinetics in rats and humans. (Author abstract modified)

003767 Forsman, Anders; Larsson, Margareta. Psychiatric Department III, Lillhagen's Hospital, S-422 03 Hisings Backa, Sweden **Metabolism of haloperidol.** Current Therapeutic Research. 24(5):567-569, 1978.

In a study of the metabolism of haloperidol, it was demonstrated that the short acting veterinary butyrophenone azaperone forms a hydrated product in the pig, azaperol. The carbon-nitrogen chain is spared in this somewhat more hydrophilic metabolite, in which the C = O group is hydrated to C - OH. In accordance with this, the pharmacological profiles of the two substances parallel each other, although azaperol is approximately four times less active in neuroleptic tests. Previous attempts to demonstrate a similar reduction product of haloperidol in man has not been successful, but after developing a liquid/liquid chromatographic procedure, it proved possible to detect and even quantitate the hydrated metabolite in serum and urine of patients on high doses of haloperidol. The structure was confirmed by mass spectometry. Individual variability in forming this new metabolite is being investigated, but its clinical consequences are still to be evaluated. 6 references.

003768 Frazer, Alan. Veterans Administration Hospital, Philadelphia, PA **Cell membranes, lithium and affective disorders.** Continuing medical education: syllabus andproceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 105).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Research on the idea that alterations in properties of cell membranes regulating cation transfer may be involved in the genesis of affective disorders is reviewed critically, with particular emphasis given both to the process involved in the transfer of the lithium ion across the erythrocyte (RBC) membrane and the effects of lithium on sodium ion transfer across the RBC membrane. Data are presented from studies on the rate of efflux of radioactive sodium ion from erythrocytes obtained from different patient populations, as well as of the effect of lithium ion on labelled sodium ion transfer. Contrary to earlier reports, no evidence is found for an abnormality in sodium transfer in bipolar depressives. Ideas as to further investigation of transport of cations and other substances are discussed. (Journal abstract modified)

003769 Freedberg, Kenneth A.; Innis, Robert B.; Creese, Ian; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Antischizophrenic drugs: differential plasma protein binding and therapeutic activity.** Life Sciences (Oxford). 24(26):2467-2473, 1979.

In fresh human plasma, the percentage of free neuroleptic drug unbound to plasma protein was much higher for the respective metabolites of chlorpromazine and thioridazine, 7-hydroxychlorpromazine and mesoridazine, than for the parent drugs. This finding sugests that chlorpromazine and thioridazine, two of the most widely employed antischizophrenic drugs, may act through their metabolites rather than by exerting antischizophrenic effects themselves. Measuring free levels of the active metabolites of neuroleptics as well as the parent drugs may facilitate regulation of neuroleptic doses to secure optimal therapeutic response. 35 references. (Author abstract modified)

003770 Garfinkel, Paul E.; Warsh, Jerry J.; Stancer, Harvey C. Clarke Institute of Psychiatry, 250 College Street, Toronto, Ontario M5T 1R8, Canada **Depression: new evidence in support of biological differentiation.** Amrican Journal of Psychiatry. 136(4B):535-539, 1979.

In a study of biological differentiation of depressive syndromes, monoamine metabolism was investigated in patients with bipolar (manic-depressive) and unipolar depressive illness and in normal control Ss under strict dietary conditions before and during administration of carbidopa, a peripheral decarboxylase inhibitor. It is reported that unipolar depressed patients excreted higher amounts of 3-methoxy-4- hydroxyphenylglycol (MHPG) and 5-hydroxyindoleacetic acid (5-HIAA) in the drug free period and while receiving carbidopa and significantly less tryptamine only after carbidopa administration. Plasma tryptophan levels differed in the three groups. Changes in serotonin and norepinephrine metabolism in unipolar depressed Ss were revealed that distinguish this group from normal and bipolar depressed Ss, suggesting a reduced CNS uptake of tryptophan in unipolar depression. 34 references. (Author abstract modified)

003771 Glassman, Alexander H. Dept. of Psychiatry, College of Physicians and Surgeons of Columbia University, New York, NY 10027 **Patient response, drug response, and drop-outs: a study of 140 consecutive endogenous depressives.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC American Psychiatric Assn., 1978. 321 p. (p. 46).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. A plasma level study of imipramine hydrochloride which took into account a drug free and a placebo period is described. The study involved more than eight patients who successfully completed a 4 week treatment period; 140 consecutive endogenous depressive admissions actually had to be collected. The difference between these two figures represents primarily patients who improved or recovered during the drug free and/or placebo period or patients who had to be dropped from the study protocol. Combining these data with the outcome data from the active treatment period gives a much more accurate picture of what actually goes on during supposedly active drug treatment in routine clinical practice. Similarly, a surprisingly high rate of serious orthostatic hypotension among

those patients with therapeutic plasma levels of imipramine was revealed by examining side-effects in light of actual drug plasma levels. (Journal abstract modified)

003772 Gram, Lars; Kupfer, David J.; Hanin, Israel; Spiker, Duane G. University of Pittsburgh School of Medicine, Pittsburgh, PA **Pharmacokinetics in plasma level monitoring of tricyclics.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC American Psychiatric Assn., 1978. 321 p. (p. 46).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Due to an increasing amount of evidence showing a relationship between blood levels of tricyclic antidepressants (TCA) and therapeutic effect, several pharmacokinetic principles common to different TCAs are presented which are necessary for the use of plasma level monitoring in clinical practice. These principles include: 1) the presumption of a patient independent relationship between effect and drug concentration at the receptor site which is mirrored by the drug concentration in plasma water; this presumption may be invalidated if the degree of protein binding varies among individuals, as has been reported for nortriptyline and imipramine; 2) the relationship between measured drug concentration and average drug concentration and effect as determined by dose schedule and time of blood sampling; 3) correlation of effect to plasma levels during steady state conditions; 4) different effects or potency between parent compounds and active metabolites; and 5) influence of pharmacodynamic, environmental, and clinical factors on clinical effect of TCA. (Journal abstract modified)

003773 Greenblatt, D. J.; Shader, R. I.; Franke, K.; Harmatz, J. S. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Pharmacokinetics of chlordiazepoxide and metabolites following single and multiple oral doses.** International Journal of Clinical Pharmacology and Biopharmacy. 16(10):486-493, 1978.

Single and multiple dose pharmacokinetic studies of oral chlordiazepoxide hydrochloride (CDX/HCL) in 3 healthy volunteers are described. Following single 50mg oral doses of CDX/HCL, absorption and elimination proceeded as apparent first order processes. Values of absorption half-life were: 14.5, 189, and 18.9minutes; elimination half-lives were: 7.6, 9.8, and 12.6hours. Disappearance of CDX was mirrored by appearance of its first active metabolite, desmethylchlordiazepoxide (DMCDX). During once daily ingestion of 50mg of CDX/HCL, observed values of CDX accumulation half-life differed substantially from values predicted based upon the single dose study; predose steady state CDX blood concentrations also differed from the predicted values. Accumulation half-lives for the metabolite DMCDX were: 17.7, 9.9, and 15.8hours. Accumulation in blood of a second active metabolite, demoxepam (DMX), proceeded with half-life values of 21.2, 34.2, and 78.5hours. Minimum steady state concentrations of DMCDX and DMX exceeded those of the parent compound. Thus accumulation and persistence of at least two active metabolites during long-term treatment with chlordiazepoxide renders the drug suitable for single daily dose therapy of anxiety. 21 references. (Author abstract)

003774 Hirata, F.; Tallman, J. F., Jr.; Henneberry, R. C.; Mallorga, P.; Strittmatter, W. J.; Axelrod, J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20205 **Regulation of beta-adrenergic receptors by phospholipid methylation. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 1 p.

The synthesis and degradation of methylated phospholipids are shown to be involved in regulating the number of the beta-adrenergic receptors and their coupling to adenylate cyclase in rat reticulocytes, HeLa cells, and human astrocytoma cells. Methylation of the phospholipids in these cells is stimulated by binding of agonists to the beta-adrenergic receptors; accumulation of the intermediate, phosphatidyl-N-monomethylethanolamine causes an increase in membrane fluidity and enhances the coupling of the receptors to adenylate cyclase. Sodium butyrate and other short-chain fatty acids increase the number of beta-adrenergic receptors in HeLa cells. Agents that inhibit phospholipid methylation block the increase in receptors by sodium butyrate. In rat reticulocyte ghosts, phospholipid methylation unmasks cryptic receptors. Conversely, the degradation of methylated phospholipids appears to be closely associated with desensitization of the beta-adrenergic receptors by prolonged stimulation with isoproterenol. Inhibition of phospholipase-A2 and the stimulation of the lipase cause inhibition and stimulation of this desensitization process, respectively. (Author abstract modified)

003775 Jain, A. K.; LaCorte, W.; Hague, D.; McMahon, F. G.; Ryan, J. R. Therapeutics Section, Tulane University School of Medicine, New Orleans, LA **Gastric antisecretory activity of LS-519: a controlled study.** Clinical Pharmacology and Therapeutics. 25(2):231, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. The gastric antisecretory activity of pirenzepine (LS-519), a drug structurally related to tricyclic compounds, was evaluated in a double-blind study in 10 young healthy male subjects. Single oral doses of 25 or 50mg LS-519 reduced the basal volume of gastric secretions by 40% and stimulated gastric juice volume by 27% 1 hour after administration and by 34% 2 hours after administration. The basal gastric acidity was reduced by 32% and stimulated by 27-39% at hour 1 and by 37-48% at hour 2. The increase in pH and reduction of gastric acidity with LS-519 were more pronounced after insulin stimulation than after pentagastrin stimulation. There were no peripheral anticholinergic side-effects or changes in blood pressure or pulse. It is concluded that LS-519, a mild anxiolytic agent, may be beneficial in reducing gastric hyperacidity. (Author abstract modified)

003776 Lal, S.; Nair, N. P. V.; Cervantes, P.; Pulman, J.; Guyda, H. Department of Psychiatry, Montreal General Hospital, 1650 Cedar Avenue, Montreal, Quebec, Canada H3G 1A4 **Effect of naloxone or levallorphan on serum prolactin concentrations and apomorphine-induced growth hormone secretion.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(2):173-179, 1979.

The effect of naloxone and another opioid antagonist, levallorphan, on prolactin secretion and apomorphine-induced growth hormone was investigated in normal subjects. Naloxone HCl (0.8mg intravenously; n=9) or levallorphan tartrate (0.25mg subcutaneously; n=5) had no effect on basal prolactin or growth hormone secretion in normal men. Neither narcotic antagonist inhibited the growth hormone secretory response to apmorphine HCl (0.75mg subcutaneously). These findings suggest that narcotic antagonists do not block dopamine receptors in the hypothalamic pituitary axis in man. If these agents have antischizophrenic properties, then these are not mediated by dopamine receptor blockade. 40 references. (Author abstract modified)

003777 LLoyd, K. G.; Dreksler, S. Department of Neuropharmacology, LERS, 31, avenue P. V. Couturier, F-92220 Bagneux, France **An analysis of (3H)gamma-aminobutyric acid (GABA) binding in the human brain.** Brain Research (Amsterdam). 163(1):77-87, 1979.

The binding of tritiated gamma-aminobutyric acid (GABA) to membranes prepared from human brains obtained postmortem was examined. Binding was independent of patient sex, age (16-80 years), postmortem interval (4-33 hours), or storage time when frozen (0-64 months). In preparations from cerebellar cortex, various compounds displaced (3H)GABA binding with the following descending order of potency: muscimol, 3-aminopropanesulfonic acid, GABA, imidazoleacetic acid, delta-amino-n-valeric acid, 3-hydroxyGABA, bicuculline. Strychnine, homocarnosine, clozapine, thioridazine, and pimozide were also active in vitro. Chlorpromazine, haloperidol, aminooxyacetic acid, baclofen, picrotoxin, anticholinergics, metrazole, anticonvulsants, and naloxone were inactive. Tritiated GABA binding was altered in Huntington's chorea and Reye's syndrome, but not in schizophrenia or sudden infant death dyndrome. Results suggest that the measurement of (3H)GABA binding in postmortem human brain offers a reflection of the state of the physiologically relevant GABA receptor. 34 references. (Author abstract modified)

003778 MacLeod, S. M.; Giles, H. G.; Bengert, B.; Liu, F. F.; Sellers, E. M. Division of Clinical Pharmacology, Addiction Research Foundation, 33 Russell Street, Toronto, Ontario M5S 2S1, Canada **Age- and gender-related differences in diazepam pharmacokinetics.** Journal of Clinical Pharmacology. 19(1):15-19, 1979.

Diazepam pharmacokinetics were examined in young (median age, 26 years) and geriatric (median age, 81.5years) subjects of both sexes, following intravenous administration of 0.125mg/kg diazepam over 10 minutes. Plasma clearance values were significantly different between male (median 33.2ml/minute) and female (median 18.1ml/minute) Ss, but not between young and elderly Ss. The half lives of diazepam were significantly shorter in men (32 hours) than in women (46.2hours), but no significant difference between young and elderly Ss was observed. The apparent volumes of distribution (Vd) were not significantly different between male and female Ss or between young and elderly Ss; however, a significant difference in Vd was observed between young male (1.0liter/kg) and young female (1.28liter/kg) Ss. 16 references.

003779 Matz, D. R.; Rolf, L. H.; Brune, G. G. Dept. of Neurology, University of Munster, Roxelerstrasse 131, D-4400 Munster, Germany **Serotonin metabolism with idiopathic grand mal seizures.** Journal of Neurology. 219(4):283-287, 1978.

Serotonin values were determined in platelets of 140 patients with idiopathic grand mal seizures, divided into five groups on the basis of medication: no medication, diphenylhydantoin, diphenylhydantoin calcium, primidon, and combinations of the above. There were significantly reduced serotonin values in these patients, as well as in each of the various groups, as compared with values obtained in healthy subjects. Furthermore, significantly higher values were observed in patients receiving primidone as compared with those receiving no medication, diphenylhydantoin, and a combination of the various anticonvulsants. Results taken together with those reported in the literature point to the possibility that a special imbalance in the cerebral neurotransmitter system, including a deficiency of serotonin, may represent a pathogenic factor for idiopathic grand mal seizures. In addition, results indicate that primidone elevates serotonin in platelets of patients with grand mal seizures. 18 references. (Author abstract modified)

003780 Meltzer, Herbert Y.; Goode, David J.; Young, M.; Strahilevitz, M.; Creese, I.; Snyder, Sol H. Dept. of Psychiatry, University of Chicago, Pritzker School of Medicine, Chicago, IL 60615 **Serum prolactin and clinical response.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 209).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Data relating antipsychotic activity and prolactin secretion stimulating effects of neuroleptics to dopamine receptor blockage are reviewed. It is likely that neuroleptic drugs achieve their antipsychotic effects by blocking postsynaptic dopamine receptors, probably in the mesolimbic or limbic cortical areas. Administration of neuroleptics to male and female schizophrenics was found to produce an increase in serum prolactin levels. The correlations between change in the thought disorder subscale or global rating of psychosis and serum prolactin levels were significant for both males and females. It is concluded that serum prolactin levels can reflect changes in dopamine dependent processes that mediate antipsychotic activity. 2 references. (Journal abstract modified)

003781 Midgley, I.; Hawkins, D. R.; Chasseaud, L. F. Department of Metabolism and Pharmacokinetics, Huntingdon Research Centre, Huntingdon PE18 6ES, England **The metabolic fate of the antidepressive agent amitriptylinoxide in man.** Arzneimittel-Forschung (Aulendorf). 28/2(10b):1911-1916, 1978.

The excretion and plasma concentrations of radioactivity and chromatographic patterns of major radioactive components in the plasma and urine were investigated after oral administration of 25mg of a C-labelled form of the antidepressant drug amitriptylinoxide to four human subjects. It was found that levels of amitriptyline and nortriptyline in urine (and plasma) were insignificant. Results indicate that in humans, the metabolic pathway for amitriptylinoxide involves hydroxynortriptyline; no evidence was found of further N-demethylated metabolites. 12 references.

003782 Miller, Richard J. Department of Pharmacological and Physiological Sciences at the University of Chicago, Chicago, IL 60637 **From analgesia to schizophrenia: the potential of endorphins.** Behavioral Medicine. 6(5):30-33, 1979.

The discovery in the nervous system of morphine-like peptides and their receptors and the pharmacological activities of these subtances are discussed. Two major discoveries are discussed: the confirmation of the existence of opiate receptors and the discovery of the endorphins and the enkephalins, the peptides with a morphine-like action. Research on the role of opiate peptides in many areas of neurobiology and neuropharmacology is discussed. The discovery of the enkephalins also raises the possibility of producing an analgesic drug that is nonaddictive. Among the other functions of enkephalins are its effects on gut motility. Studies being conducted to help clarify the roles of these peptides in normal and pathological states (i.e.,schizophrenia and epilepsy) are cited. 3 references.

003783 Monaco, F.; Riccio, A.; Fantini, M.; Baruzzi, A.; Morselli, P. L. Clinica Neurologica, Viale S Pietro 10, I-07100 Sassari, Italy **A month-by-month long-term study on carbamazepine: clinical, EEG and pharmacological evaluation.** Journal of International Medical Research (Northampton). 7(2):152-157, 1979.

Carbamazepine plasma levels were monitored for a 12 month period in 20 epileptic patients. Seizure frequency decreased remarkably on inclusion of the drug in the therapy and attainment of plasma levels of 7-9mcg/ml. A faster breakdown rate in children was confirmed, while carbamazepine-10, 11-epoxide was present for carbamazepine levels above 4-5mcg/ml. EEG tracings did not show substantial modifications. This variable was thus considered to be of little value in assessing the clinical picture. Side-effects were minimal. It is concluded that carbamazepine is increasingly becoming the drug of first choice in the management of both generalized and partial epilepsy, while

better and more rapid results are obtained in monotherapy. 11 references.(Author abstract)

003784 Nakano, S.; Ogawa, N.; Kawazu, Y. Department of Pharmacology, Ehime University School of Medicine, Ehime-ken Japan **Influence of neuroticism level on diazepam absorption.** Clinical Pharmacology and Therapeutics. 25(2):239, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Diazepam (DZP) absorption was studied in 24 healthy male Ss given a single 5mg oral dose of DZP after a standard breakfast. Half of the Ss had high neuroticism (HN) levels and half had low neuroticism (LN) levels on the Maudsley Personality Inventory. Mean plasma concentrations of DZP were 148ng/ml at 1.5hours and 102ng/ml at 6 hours in the HN group, compared to 97ng/ml at 1.5hours and 76ng/ml at 6 hours in the LN group. When the same dose of DZP was introduced directly into the duodenum through a duodenal tube in these Ss several months later, no differences in plasma DZP concentrations were found between the HN and LN groups. No clear relationship between plasma DZP levels and sedative effects were found. Results suggest that the absorption of DZP from the gastrointestinal tract is faster in HN Ss than in LN Ss due to faster gastric emptying time in the HN Ss. (Author abstract modified)

003785 Naranjo, C. A.; Sellers, E. M.; Abel, J. G.; Giles, H. G.; Holzapfel, S. Div. of Clinical Pharmacology, Addiction Research Foundation, Toronto Westren Hospital, University of Toronto, Toronto, Ontario, Canada **Variations in free fraction (alpha): mechanism of diurnal fluctuations in plasma diazepam concentrations.** Clinical Pharmacology and Therapeutics. 25(2):239, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Fluctuations in plasma diazepam (D) concentrations during the elimination phase (more than 24 hours after administration) were studied in six volunteers given 10mg i.v. D. Total D concentrations were lowest between 11p.m. and 8a.m. and highest between 9a.m. and 10p.m. Plasma D,N-desmethyldiazepam (DM) and calculated free D concentrations fluctuated similarly. D-alpha was highest before 8a.m. and significantly lower after 9a.m. The increases in D and the decreases in D-alpha were significantly associated with food intake. The coincident variations of D and DM and the reciprocal variations of D-alpha indicate that intravascular and tissue redistribution rather than drug biotransformation is responsible for these fluctuations. (Author abstract modified)

003786 Ochs, Hermann R.; Greenblatt, David J.; Woo, Elaine; Franke, Kate; Smith, Thomas W. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Effect of propranolol on pharmacokinetics and acute electrocardiographic changes following intravenous quinidine in humans.** Pharmacology (Basel). 17(6):301-306, 1978.

The effects of propranolol coadministration on the pharmacokinetics and acute electrocardiographic effects of intravenous quinidine were examined in five healthy human volunteers. Intravenous quinidine produced tachycardia, T-wave flattening, and prolongation of the QT interval. Propranolol had no effect on these parameters or on quinidine pharmacokinetics. Although propranolol coadministration had no adverse effects in these healthy volunteers, the propranolol/quinidine combination may not be safe in patients with cardiovascular disease. 11 references. (Author abstract modified)

003787 Pandey, G. N.; Goel, I.; Davis, J. M. Illinois State Psychiatric Institute, Chicago, IL **Effect of neuroleptic drugs on lithium uptake in human erythrocytes.** Clinical Pharmacology and Therapeutics. 25(2):240, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. The effects of haloperidol (HP), butaperazine (BPZ), chlorpromazine (CPZ), thioridazine (Me), fluphenazine (FPZ), and imipramine (IM) on the in vitro transport of lithium (Li) in human erythrocytes was examined. Me, FPZ, BPZ, and CPZ (0.00005M) all increased Li influx, in descending order of potency, whereas HP and IM were without effect. The increase in Li influx appeared to be caused by increased uptake through passive leak diffusion rather than by effects on ouabain sensitive or Li/sodium ion exchange pathways. These results suggest that the toxicity reported in some patients treated with Li in combination with neuroleptics may be due to increased intracellular levels of Li. 1 reference. (Author abstract modified)

003788 Pandey, Ghansyam. Biological Research Laboratories, Illinois State Psychiatric Institute, Chicago, IL **Lithium efflux from red cells in affective illness.** Continuing medical education: syllabus and proceedings in summary .form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 104-105).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Questions which relate to lithium efflux from red cells in affective illness are forwarded and explored. In vitro studies of lithium transport in red cells of different patient populations, their available first degree relatives, and normal controls are reported. Preliminary results suggest that the proportion of patients showing reduced lithium efflux is higher in the bipolar group than in the schizophrenic, unipolar, or normal control group. Patients with reduced lithium efflux generally respond to lithium therapy. It is reported that a marked reduction in lithium efflux has been found in first degree relatives of four patients with efficient lithium efflux, providing evidence of genetic control of this abnormality. (Journal abstract modifiedd)

003789 Patel, I. H.; Levy, R. H.; Cutler, R. E. School of Pharmacy, University of Washington, Seattle, WA **Phenobarbital-valproic acid interaction in normal man.** Clinical Pharmacology and Therapeutics. 25(2):241, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. In a study of the interaction of phenobarbitol (PB) and valproic acid (VPA), six normal human volunteers were given a 60mg oral dose of PB alone and then given the same dose of PB on the fourth day of chronic treatment with VPA (250mg, twice a day for 14 days). Results indicate that VPA significantly alters the elimination parameters for PB. After VPA, the PB half-life increased from 100 to 144 hours, and plasma clearance decreased from 4.2to 3.0ml/hour/kg. Renal clearance was unchanged, but metabolic clearance decreased from 3.3to 2.0ml/hour/kg. The fraction of the dose excreted unchanged increased from 0.22 to 0.33. Results indicate that VPA inhibits PB metabolism. (Author abstract modified)

003790 Peterson, G. R.; Hostetler, R. M.; Kuzma, R.; Adolphe, A.; Blackwell, B. Wright State University School of Medicine, Dayton, OH **Anticholinergic properties of tricyclic antidepressants.** Clinical Pharmacology and Therapeutics. 25(2):241-242, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. The peripheral anticholinergic effects of amitriptyline, desipramine, doxe-

pin, imipramine, and nortriptyline were evaluated by measuring their ability to depress salivation in 12 female volunteers. At a dose of 100mg, all drugs significantly decreased salivary flow (amitriptyline, 72%; doxepin, 64%; imipramine, 62%; nortriptyline, 61%; desipramine, 56%). A similar ranking was seen for central effects, measured by the Clyde Mood Scale, and for unsolicited reports of adverse effects such as dry mouth and sedation. Results indicate that the tricyclic antidepressants manifest different degrees of anticholinergic activity, and that structure/activity relationships can be discerned. 1 reference. (Author abstract modified)

003791 Poley, Gerald E., Jr.; Shively, Carol A.; Vesell, Elliot S. Dept. of Pharmacology, Pennsylvania State University College of Medicine, Hershey, PA 17033 **Diurnal rhythms of aminopyrine metabolism: failure of sleep deprivation to affect them.** Clinical Pharmacology and Therapeutics. 24(6):726-732, 1978.

The effect of sleep deprivation on diurnal rhythms of aminopyrine metabolism was investigated in 12 normal male volunteers. After a single oral dose of aminopyrine, mean salivary aminopyrine half-lives and metabolic clearance rates in the Ss exhibited diurnal variations. Sleeplessness for 24 hrs or 48 hrs failed to affect diurnal rhythms in aminopyrine metabolism or plasma 11-hydroxycorticosteroids concentrations. 20 references. (Author abstract modified)

003792 Poser, W.; Poser, S. Psychiatrische Universitatsklinik Gottingen, v. Sieboldstr. 5, D-3400 Gottingen, Germany **Plasma levels of hypnotics: do they help for the diagnosis of drug dependence?** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R71, 1979

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the usefulness of plasma levels of sedatives and hypnotics in the diagnosis of drug dependence is discussed. In four volunteers, the bromide plasma levels after daily intake of bromisovalum or carbromal for several weeks reflected the almost complete liberation of bromine as inorganic bromide. In patients, the correlation of plasma levels of bromide, diethylpentenamide, diazepam, and nordiazepam revealed the development of tolerance. High plasma levels of an alcohol or barbiturate substance in the absence of signs of intoxication (ataxia, dysarthria, nystagmus, and disturbances of consciousness) proved to be a reliable indicator of drug dependence. This pattern tends to appear earlier than delirium or withdrawal fits and is therefore useful in epidemiological studies. (Author abstract modified)

003793 Price, Kathleen S.; Farley, Irene J.; Hornykiewicz, Oleh. Clarke Institute of Psychiatry, Toronto M5T 1R8, Canada **Neurochemistry of Parkinson's disease: relation between striatal and limbic dopamine.** Advances in Biochemical Psychopharmacology. 19:293-300, 1978.

The distribution of dopamine (DA) and homovanillic acid (HVA) in the normal human brain and in brains from patients with Parkinson's disease was examined postmortem. DA levels in the paraolfactory gyrus, lateral hypothalamus, and nucleus accumbens (but not in the medial and lateral olfactory areas) of the Parkinson's patients were markedly decreased relative to normal brain. Concentrations of HVA concentrations were decreased in all analyzed limbic regions in the Parkinson's patients. The decrease of DA in the paraolfactory gyrus was similar to that in the putamen, and the decrease in the nucleus accumbens was similar to that in the caudate nucleus. These results indicate that parkinsonian akinesia results from a combined caudate/accumbens DA deficiency, rather than being exclusively due to DA loss in the caudate nucleus. The finding of disturbed DA metabolism in some limbic forebrain structures suggests that DA changes in limbic regions may be an important factor in the etiology of affective disturbances commonly observed in patients with Parkinson's disease. 22 references.

003794 Reilly, D. K.; Rivera-Calimlim, L. Dept. of Pharmacology, University of Rochester School of Medicine, Rochester, NY **Racial difference in catechol-O-methyltransferase activity? A comparison of Filipinos with Caucasians in the United States.** Clinical Pharmacology and Therapeutics. 25(2):244, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Studies in 32 Filipino Ss and 29 Caucasian Ss revealed significantly elevated erythrocyte catechol-O-methyltransferase (COMT) activity in the Filipino Ss. These findings are discussed in light of previous observations that Filipino parkinsonian patients do not tolerate the usual doses of levodopa (LD) containing agents given their American counterparts, and that COMT activity is correlated with average plasma ratios of 3-O-methyldopa:LD in parkinsonian patients treated with LD or LD plus carbidopa. It is suggested that inherited differences in COMT activity may be an important factor in determining clinical response to LD. (Author abstract modified)

003795 Reimann, I. W.; Leftwich, R.; Rhageb, M.; Frolich, J. C. Dr. Margarete Fischer-Bosch-Institute of Clinical Pharmacology, Auerbachstr. 112, D-7000 Stuttgart 50, Germany **Indomethacin increases plasma lithium.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R72, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the effect of the prostaglandin (PG) synthesis inhibitor indomethacin (I) on urinary lithium excretion (U/Li) and lithium plasma levels (Pl/Li) in four healthy volunteers and three psychiatric patients is reported. The Ss were given I for 7 days, followed by a placebo period of 5-7 days. During the drug period, there was a significant mean decrease of 28% in U/Li, accompanied by an increase in Pl/Li in all Ss; the increase of Pl/Li was 59% in psychiatric patients and 30% in normal volunteers. Measurements of the major metabolite of PGE2 indicated that I significantly reduced PG synthesis. During the placebo period, the Pl/Li gradually declined to initial levels within 5-7 days. In light of the very small therapeutic range of Pl/Li, the magnitude of the Pl/Li increase caused by I suggests a clinically important drug interaction between I and lithium. 1 reference. (Author abstract modified)

003796 Resnick R. B.; Washton, A.; Verebey, K.; Mule, S. J. Dept. of Psychology, University of Illinois, Champaign, IL 61820 **Increased serum methadone levels in humans during naloxone-precipitated withdrawal.** Psychopharmacology Bulletin. 15(2):42-44, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, increased serum methadone levels in humans during naloxone precipitated withdrawal are reported. To investigate the hypothesized displacement mechanism in opiate withdrawal, changes in serum methadone levels in four Ss undergoing the serial naloxone procedure were measured. Serum methadone levels were also examined in three additional methadone dependent Ss who received a single injection of naloxone. The obtained increases in levels of serum methadone were closely paralleled by manifestations of withdrawal discomfort. 7 references.

003797 Robinson, Ann E.; McDowall, R. D. Occupational Health Laboratory, Ontario Ministry of Labour, 400 University Ave., Toronto, Ontario M7A 1T7, Canada **The distribution of**

amylobarbitone, butobarbitone, pentobarbitone and quinalbarbitone and the hydroxylated metabolites in man. Journal of Pharmacy and Pharmacology (London). 31(6):357-365, 1979.

Fluid and tissue specimens collected from 30 subjects at autopsy were assayed for their content of common sedative barbiturates and the corresponding hydroxylated metabolites. Where one barbiturate had been ingested, an inverse relationship between lipid solubility of the drug and the distribution in fluids and tissues was observed. In most cases the liver, and in the remainder the spleen, contained the highest concentrations of barbiturate. Bile concentrations were often in excess of those in the corresponding liver. The metabolites of the four sedative barbiturates were usually present in lower amounts than the parent drugs in the fluids and tissues of most subjects but urine often contained much higher concentrations of metabolites, sometimes exceeding that of the parent drug in the liver. Administration of two or more barbiturates together did not appear to affect the distribution and metabolism of the individual drugs. 27 references. (Author abstract)

003798 Robinson, David Owen; Egan, Donald J. Addiction Research, 1827 Gaylord St., Denver, CO 80206 **Opiate agonist and antagonist receptors.** Journal of Psychedelic Drugs. 10(3):277-278, 1978.

A reply to research by Snyder (1975, 1977a, 1977b), which concluded that opiate receptors in the brain are the mechanism of opiate analgesia and that antagonists act on these same receptors, is presented. It is proposed that the effects of these drugs are better described by supposing that separate receptors exist for opiate agonists, and antagonists, connected in such a way that the stimulation of antagonists receptors attenuates the output from agonist receptors. Snyder's model has difficulty in accounting for two facts: 1) some drugs have a combined agonist and antagonist effect, and 2) his theory would predict that a hypersensitivity to pain would be experienced by individuals administered pure antagonists, although this phenomenon has not been observed. These problems can be accommodated within the proposed receptor theory if the separate receptors are arranged as an opponent process of the type suggested by Soloman and Corbit (1973, 1974). 6 references.

003799 Roth, Jerome A. Dept. of Pharmacology and Therapeutics, State University of New York, Buffalo, NY 14214 **Benzylhydrazine -- a selective inhibitor of human and rat brain monoamine oxidase.** Biochemical Pharmacology (Oxford). 28(6):729-732, 1979.

The question of whether benzylhydrazine, (BzNNH2) would be a selective inhibitor of human brain monoamine oxidase (MAO) was examined. BzNNH2 was shown to inhibit irreversibly human brain type-A and type-B MAO as measured by 5-hydroxytryptamine (5-HT) and phenylethylamine (PEA) deamination, respectively. Inhibition of 5-HT deamination was essentially noncompetitive, whereas that for PEA approached uncompetitive kinetics. BzNNH2 also inhibited rat brain MAO in vivo. These results indicate that BzNNH2 preferentially inhibits the B-form of both human and rat brain MAO. 19 references. (Author abstract modified)

003800 Schley, J. Psychiatrische Klinik und Institut fur Biochemie der FU Berlin, Limonenstr. 7, D-1000 Berlin 45, Germany **Specific binding of the major tranquilizer perazine to serum proteins.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 307(Supplement):R70, 1979.

In a paper presented at the 20th Spring Meeting of the Deutsche Pharmakologische Gesellschaft, held in Mainz in March 1979, the specific binding of perazine to a human serum protein with a molecular weight of 48,000 daltons is reported. The affinity constant of the perazine/protein complex was determined as 5,420,0001/M, corresponding to a maximal binding of 70ng/ml serum. No binding of perazine to human or bovine albumin could be found. (Author abstract modified)

003801 Shekim, Walid O.; Dekirmenjian, Haroutune; Chapel, James L. Children and Youth Center, University of Missouri-Columbia School of Medicine, N119 Medical Center, Columbia, MO 65201 **Urinary MHPG excretion in minimal brain dysfunction and its modification by d-amphetamine.** American Journal of Psychiatry. 136(5):667-671, 1979.

The excretion of 3-methoxy-4-hydroxyphenylglycol (MHPG) in 15 hyperactive boys and 13 controls was examined. Soft neurologic signs and clinical drug response to d-amphetamine administration were also examined for 2 weeks in the hyperactive boys. MHPG excretion was significantly lower in the hyperactive boys than in the controls. D-amphetamine decreased MHPG excretion significantly in the drug responders only. Pretreatment MHPG excretion did not predict clinical drug response. The responders had more soft neurologic signs than the nonresponders. Furthermore, it is reported that soft neurologic signs were not related to pretreatment MHPG levels. 29 references. (Author abstract)

003802 Smith, J. A.; Barnes, J. L.; Mee, T. J. Department of Pharmaceutical Chemistry, University of Bradford, Bradford, England **The effect of neuroleptic drugs on serum and cerebrospinal fluid melatonin concentrations in psychiatric subjects.** Journal of Pharmacy and Pharmacology (London). 31(4):246-248, 1979.

The effect of neuroleptic drugs on serum and cerebrospinal fluid (CSF) melatonin (MT) concentrations was investigated in psychiatric patients. Clorpromazine (CPZ) produced a dose related increase in serum MT concentrations, but not in CSF MT concentrations. Neither flupenthixol nor fluphenazine elevated serum MT. The high serum MT concentrations in CPZ treated patients may explain the initial sedative effect of CPZ prior to the onset of its antipsychotic action. 13 references.

003803 Sovner, Robert; Orsulak, Paul J. Dept. of Psychiatry, Tufts University School of Medicine, Boston, MA **Excretion of imipramine and desipramine in human breast milk.** American Journal of Psychiatry. 136(4A):451-452, 1979.

A case report documenting the excretion of both imipramine and desipramine in human breast milk is presented. It is hypothesized that imipramine and desipramine are passively transported into milk along with lipid substances because both drugs are highly lipophilic. The child did not appear to be affected by the ingestion of imipramine and desipramine, however, the levels of these drugs in the mother's plasma were well below therapeutic levels. It is advised that nursing women discontinue breast feeding if they require antidepressant drug therapy. 9 references.

003804 Speeg, K. V., Jr.; Wang, Sherry; Avant, George R.; Berman, M. Lawrence; Schenker, Steven. Department of Medicine, Vanderbilt University School of Medicine, Nashville, TN 37232 **Antagonism of benzodiazepine binding in rat and human brain by Antilirium.** Life Sciences (Oxford). 24(15):1345-1350, 1979.

Physostigmine (Antilirium) inhibited the binding of tritiated diazepam and flunitrazepam in a dose dependent manner in both rat and human brain. The degree of inhibition was correlated with the affinity of benzodiazepine for its receptor, such that diazepam binding was more affected than flunitrazepam binding. The inhibition was rapid, but the kinetics were complex: only high doses of physostigmine showed competitive inhibition when studied at equilibrium. These results indicate that the effectiveness of physostigmine in reversing benzodiazepine-in-

duced hypnosis may be mediated by competition for cerebral diazepam binding in brain rather than by a cholinergic mechanism. 14 references. (Author abstract modified)

003805 Strittmatter, Warren J.; Hirata, Fusao; Axelrod, Julius. Axelrod: Section on Pharmacology, Laboratory of Clinical Science, Bldg. 10, NIMH, Bethesda, MD 20014 **Increased CA2-ATPase activity associated with methylation of phospholipids in human erythrocytes. (Unpublished paper).** Bethesda, MD, NIMH, 1979. 10 p.

Ca2-adenosinetriphosphate (Ca2-APTase) activity in human erythrocytes is shown to be increased by the enzymatic methylation of membrane phospholipds. Erythrocyte membranes incubated in the presence of the methyl donor, S-adenosyl-L-methionine, demonstrate increased CA2 stimulated ATP hydrolysis, increased (45Ca2) efflux from erythrocyte ghosts, and synthesis of phosphatidyl-N-monomethylethanolamine. The increase in CA2ATP activity is due to an increase in Vmax, and not due to damages in affinity for ATP or Ca2. The concentration of S-adenosyl-L-methionine needed to stimulate Ca2-ATPase closely matches that needed for the methylation of phosphatidylethanolamine. Both the stimulation of Ca2-ATPase and the methylation of phospholipids are inhibited by the methyltransferase inhibitor, S-adenosyl-L-homocysteine. Membrane fluidity is increased by phospholipid methylation, which may be the mechanism for Ca2-ATPase stimulation. 11 references. (Author abstract)

003806 Stubbs, W. A.; Delitala, G.; Jones, A.; Jeffcoate, W. J.; Edwards, C. R. W.; Ratter, S. J.; Besser, G. M.; Bloom, S. R.; Alberti, K. G. M. M. Department of Endocrinology, St. Bartholomew's Hospital, London, EC1A 7BE, England **Hormonal and metabolic responses to an enkephalin analogue in normal man.** Lancet. No. 8102:1225-1227, 1978.

In a study of hormonal and metabolic responses to an enkephalin analogue in normal man, (D-Ala2,MePhe4,Met(o)-ol) enkephalin (DAMME) was given intravenously to normal subjects. It raised serum prolactin and growth hormone levels but lowered serum levels of luteinizing hormone, follicle stimulating hormone, cortisol, and corticotrophin. There was also a small fall in total glucagon and gastric peptide (GIP) and a rise in thyrotrophin. Beta-lipotrophin, motilin, vasoactive intestinal peptide, insulin, gastrin, and pancreatic glucogon were unchanged. Blood glycerol increased, and blood lactate, alanine, and glucose fell. Prior administration of the opiate antagonist, naloxone, attenuated the hormonal responses to DAMME. This enkaphalin analogue produces endocrine and metabolic changes in man that may be mediated through opiate binding receptors both within and outside the brain. It is suggested that the enkephalins and related substances may provide an important link between perception, behavior, and neuroendocrine regulation of hormone secretion and metabolism. 27 references. (Author abstract modified)

003807 Traficante, L. J.; Sakalis, G.; Siekierski, J.; Rotrosen, J.; Gershon, S. Neuropsychopharmacology Research Unit, Department of Psychiatry, New York University Medical Center, 550 First Avenue, New York, NY 10016 **Rapid in vitro sulfoxidation of chlorpromazine by human blood: inhibition by an endogenous plasma protein factor.** Life Sciences (Oxford). 24(4):337-345, 1979.

A study of the sulfoxidizing capacities of human hepatic and extrahepatic tissues in vitro indicates that the sulfoxidation of chlorpromazine by human blood is a major metabolic route of drug inactivation in humans, Liver, lung, and gut, but not brain, showed differential activities which were nicotinamide adenine dinucleotide phosphate (NADPH) dependent and had characteristics of enzymatic reactions. NADPH independent sulfoxidation of chlorpromazine was seen in the presence of whole blood. This reaction reached completion within 5 seconds and was considerably more active than that seen with other tissues. The total sulfoxidizing capacity of whole blood could be attributed to hemoglobin. Plasma contained a protein-like factor that actively inhibited blood catalyzed chlorpromazine sulfoxidation. This factor had a molecular weight of about 72,000 daltons. The possible role of this protein in regulating phenothiazine metabolism is discussed. 22 references. (Author abstract modified)

003808 Vestal, R. E.; Kornhauser, D. M.; Hollifield, John W.; Shand, D. G. Department of Medicine, V.A. Hospital, 5th and Fort St., Boise, ID 83702 **Inhibition of propranolol metabolism by chorpromazine.** Clinical Pharmacology and Therapeutics. 25(1):19-24, 1979.

The effects of chlorpromazine (50mg every 8 hours) on the disposition and effectiveness of propranolol were investigated in five human subjects. Chlorpromazine produced a consistent reduction in intrinsic clearance, associated with an increase in bioavailability. No changes in liver blood flow, volume of distribution, half life, or plasma binding of propranolol were observed. In two patients, chlorpromazine increased plasma levels of propranolol, resulting in increased isoproterenol antagonism and lowered plasma renin activity; a third subject showed only slightly elevated plasma propranolol and no clear pharmacodynamic changes. Postural hypotension and syncope was observed following the first dose of chlorpromazine in one subject. It is concluded that chlorpromazine can inhibit the metabolism of propranolol in humans, thereby increasing propranolol efficacy. 16 references. (Author abstract modified)

003809 Weinshilboum, Richard M. Clinical Pharmacology Unit, Mayo Medical School, Rochester, MN **Serum dopamine beta-hydroxylase.** Pharmacological Reviews. 30(2):133-166, 1978.

The biochemistry, source, fate, regulation, and assay methods for serum dopamine-beta-hydroxylase (DBH) are reviewed. Human serum DBH activity is much greater than that in any other species studied, and wide individual variations in human serum DBH activity are determined primarily by inheritance. Dramatic changes in serum DBH occur during growth and development. Increases in circulating DBH have been found in humans and in experimental animals in response to stress, but these changes are small when compared with baseline levels of DBH activity. Serum DBH activity has been measured in a variety of human diseases, including schizophrenia and primary affective disorders, and several significant differences between patients and normal subjects have been reported. However, many important questions on the mechanism of release, metabolism, biochemistry, and regulating or serum DBH must be answered if clinical data are to be interpreted usefully. 214 references.

003810 Zarifian, E.; Morselli, P. L. no address **GABA and GABA-like drugs in schizophrenia.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 158).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. A review of the theories supporting the role of GABA in schizophrenia and a critical study of GABA-like and GABA agonists as psychotrophic agents are given. The possible influence of GABAergic neurons on the DA transmission in the striatum is based on a large body of evidence. The decrease of DA transmission in animals after the stimulation of the GABA loop has been shown by different authors. It is suggested that such a modulation could be useful in schizophrenia

either by itself or as a potentiation of antipsychotic drugs. (Journal abstract modified)

003811 Ziegler, M. G.; Lake, C. R.; Williams, A. C.; Teychenne, P. F.; Shoulson, I.; Steinsland, O. Rm. 457 Gail Borden, University of Texas Medical Branch, Galveston, TX 77550 **Bromocriptine inhibits norepinephrine release.** Clinical Pharmacology and Therapeutics. 25(2):137-142, 1979.

The central and peripheral effects of the dopamine agonist bromocriptine on noradrenergic nerves were examined. The drug inhibited release of norepinephrine (NE) from isolated rabbit ear arteries by stimulating presynaptic receptors. In normotensive human subjects, bromocriptine lowered plasma and cerebrospinal fluid levels of NE by 50%. The drug lowered blood pressure moderately in standing subjects and slightly in recumbent subjects. It is concluded that bromocriptine inhibits sympathetic nervous discharge of NE through central and peripheral mechanisms. 38 references. (Author abstract modified)

14 MECHANISM OF ACTION: BEHAVIORAL

003812 Arehart-Treichel, Joan. Science News, 1719 N Street NW, Washington, DC 20036 **The pituitary's powerful protein.** Science News. 114(22):374-375, 381, 1978.

Since the discovery of the pituitary protein beta-liptropin (beta-LPH) in 1964, scientists have found that various segments of the protein exert a broad spectrum of psychopharmacological effects. For example, beta-LPH47-53 (also known as MSH/ACTH4-10, because it is identical to a seven amino acid sequence in melanocyte stimulating hormone and in adrenocorticotropic hormone) appears to improve memory and concentration and relieve anxiety in normal and mentally retarded Ss. Beta-LPH61-91, or beta-endorphin, has shown powerful analgesic activity in mice and ameliorated symptoms of depression, anxiety, and schizophrenia in psychiatric patients. Beta-LPH61-76 (alpha-endorphin) exerts analgesic and tranquillizing effects in rats, whereas beta-LPH61-77 (gamma-endorphin) induces violence, irritability, and increased sensitivity to pain. Beta-LPH61-65 (methionine-enkephalin) and related analogues have been implicated in learning, memory, pleasure, pain, and epilepsy. Scientists at pharmaceutical companies the world over are now at work developing synthetic analogues of these beta- LPH segments and predict they may be commercially available within the next 10 to 15 years.

003813 Caille, E. J.; Bassano, J. L. Centre d'Etudes et de Recherches de Psychologie Appliquee, F-83800 Toulon, France /**A study of the protective properties of the magnesium salt of N-acetyl-aspartyl glutamic acid (F8610) during transitory hypoxia (cerebral activity and availability)./** Etude des proprietes protectrices du sel de magnesium de l'acide N-acetyl-aspartyl-glutamique (F8610) dans une hypoxie transitoire (activite cerebrale et disponibilite). Psychologie Medicale. 10(1):191-198, 1978.

The protective properties of magnesium salt of N-acetyl-aspartyl glutamic acid (F8610) during transitory hypoxia was studied by giving the drug and a placebo at a dose of 2000mg daily to eight healthy volunteers for 14 days within a cross-over balanced design. At the end of the first and second week of both treatments, an anlysis of cerebral activity and availability was conducted under conditions of normoxia and hypoxia within a depressurization chamber (0 to 15,000 feet). F8610 protective properties appeared in a filtering of cerebral activity (zeroing on a fast alpha wave rhythm) which led in the finding of a normally balanced spectral composition under the reticular activation induced by hypoxia (neocortical desynchronization and limbic facilitation). A decrease in heartrate acceleration and alertness or mood change constitutes one more form of protection. 11 references. (Journal abstract modified)

003814 Chasseaud, L. F. Dept. of Metabolism and Pharmacokinetics, Huntingdon PE18 6ES, Combs, England **Metabolic fate of bromperidol in humans: comparison with rats and dogs.** Acta Psychiatrica Belgica (Bruxelles). 78(1):51-63, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977. An oral dose of 2mg of labeled bromperidol was studied in two human subjects. Over 5 days about 50% of the radioactive dose was excreted, somewhat more in urine than in feces. Excretion rates were slow. Concentrations of radioactivity in plasma were low, reaching a peak of 6 to 10ng equivalents/ml during 1.5to 4 hours, but concentrations of the parent drug were less than 0.5ng./ml at all times. A major metabolite, more polar than bromperidol, was present in human urine and is under investigation. The metabolic fate of bromperidol is different in humans from that in rats or dogs. In humans, the major metabolite did not correspond to available reference compounds. 9 references. (Author abstract modified)

003815 Di Chiara, G.; Corsini, G. U.; Mereu, G. P.; Tissari, A.; Gessa, G. L. Institute of Pharmacology, University of Cagliari, I-09100 Cagliari, Italy **Self-inhibitory dopamine receptors: their role in the biochemical and behavioral effects of low doses of apomorphine.** Advances in Biochemical Psychopharmacology. 19:275-292, 1978.

The role of self-inhibitory dopamine (DA) receptors (nigral adenylate cyclase) in mediating the biochemical and behavioral effects of low doses of apomorphine in rats and in humans is discussed. Apomorphine causes a series of biochemical, neurological, psychological, and behavioral changes which can be prevented by specific blockers of DA receptors, suggesting that these responses are mediated through stimulation of such receptors. Apomorphine decreases motor activity in rodents and has therapeutic effects in patients with Huntington's disease, tardive dyskinesia, and some schizoaffective disorders. It is suggested that these apomorphine effects may be due to decreased dopaminergic transmission, resulting from stimulation of self-inhibitory DA receptors. 40 references.

003816 Gayral, L.-F.; Oules, J. J.; Escande, M. M.; Goldberger, E. G. Clinique Universitaire de Psychiatrie, Faculte de Medecine Toulouse Purpan, F-31052 Toulouse Cedex, France / **Clinical trial with the antidepressant 19560-RP metapramine./** Essai therapeutique de l'antidepresseur 19560-RP metapramine. Encephale (Paris). 4(4):365-370, 1978.

The effect of metapramine as an antidepressant was researched in 80 adult patients with various levels of depression. They were treated and observed for 4 to 6 weeks and it was found that 60% were cured or improved considerably by metapramine, while the other 40% had to remain at the hospital and undergo another type of treatment. Metapramine was found to be a quick and powerful antidepressant and also had superior tolerance to cardio-vascular, neurologic, and digestive side-effects than did other tricyclics. Longer studies will permit the evaluation of metapramine's different activities in comparison to other antidepressants. 14 references.

003817 Gotestam, K. G.; Andersson, B. E. Institute of Psychiatry, Ostmarka Hospital, University of Trondheim, Trondheim, Norway **Subjective effects and vigilance after diazepam and oxazepam in normal subjects.** Acta Psychiatrica Scandinavica. Supplementum 274:117-121, 1978.

A paper presented at the Oxazepam Symposium entitled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. A study aimed at assessing subjective effects and vigilance after a single oral dose of two diazepines,

diazepam and oxazepam, is described. Twenty-two normal subjects were given single oral doses of 5mg diazepam, 15mg oxazepam, and placebo in a double-blind crossover trial. Subjective effects according to a rating scale and performance on a vigilance task were assessed. The results showed a difference between each of the two drugs and placebo, but none between the drugs, with regard to the vigilance test. The results from the rating of subjective effects showed an increase in tiredness for both drugs, and a decreased sense of well-being for oxazepam. 5 references. (Author abstract modified)

003818 Hunter, Andrew. University Dept. of Anaesthetics, Manchester, England **/A comparison of four sleeping potions./** One man's poison. Lancet (London). 2(8104):1367, 1978.

The effects of four types of sleeping potions, flurazepam (30 mg), temazepam (20mg), Mandrax (methaqualone 250mg/diphenhydramine 50mg), and nitrazepam (7.5mg), were examined in 53 trials by one subject and compared. Each trial involved one potion taken on an all night trip either by train or boat and the subject rated the onset of sleep and the quality of sleep. It is concluded that capsules of flurazepam and temazepam, when chewed, but not when swallowed whole (even with the ends pricked), gave a better night's sleep than Mandrax and nitrazepam.

003819 Lehmann, W. Psychiatric Clinic, Academic Hospital, Uppsala, Sweden **The effect of oxazepam on sleep in normal human volunteers.** Acta Psychiatrica Scandinavica. Supplementum 274:33-39, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The effects of 25mg of oxazepam, a benzodiazepine with a short half-life and no active metabolites, were compared with placebo in two healthy volunteers in a single-blind polygraphically recorded sleep study. The experiment lasted for 24 nights and recordings were made for 11 nights. It was found that 25mg oxazepam induced sleep faster than placebo, and that the subjects awoke less often during the treatment period. The total amount of REM sleep was not affected. However REM sleep was shortened during the latter part of the night. Slow wave sleep diminished differently in the two subjects, possibly due to interindividual differences in the rate of elimination of oxazepam. The effect on blood pressure was small, and the normal physiological difference between bedtime and morning blood pressure was preserved. 11 references. (Author abstract)

003820 Mello, Nancy K.; Mendelson, Jack H.; Kuehnle, John C.; Sellers, Margaret L. Alcohol and Drug Abuse Research Center, McLean Hospital, 115 Mill St., Belmont, MA 02178 **Human polydrug use: marihuana and alcohol.** Journal of Pharmacology and Experimental Therapeutics. 207(3):922-935, 1978.

Patterns of drug use during 10 days of concurrent access to marihuana and alcohol were compared with those during consecutive 5 day periods when only one drug was available. Subjects were 16 adult male volunteers with a history of concurrent alcohol and marihuana use. Results indicate that marihuana use tends to increase with time, independently of concurrent alcohol availability. Alcohol consumption decreased when marihuana was also available. These findings are not consistent with the hypothesis that simultaneous availability of marihuana and alcohol leads to significant increases in the use of both drugs. 32 references. (Author abstract modified)

003821 Risse, G. L.; Gazzaniga, M. S. Aphasia Unit, Hennepin County Medical Center, Minneapolis, MN 55415 **Well-kept secrets of the right hemisphere: a carotid amytal study of restricted memory transfer.** Neurology. 28(9):950-953, 1978.

Verbal and nonverbal recall of a simple tactual stimulus was assessed in patients receiving left intracarotid injections of sodium amytal. During the period of dominant hemisphere anesthetization, a common object was presented to the left hand/right hemisphere but was kept out of view. Following recovery from the drug, six of the eight patients were unable to recall the object verbally, but recognized it immediately in a visual multiple-choice array. These results demonstrate a dissociation of verbal and nonverbal memory mechanisms which suggests that delayed interhemispheric transfer of a functional sensory message is highly improbable. 9 references. (Author abstract)

15 TOXICOLOGY AND SIDE EFFECTS

003822 Birley, James L. T. Institute of Psychiatry, London, England **Life events: precipitants of schizophrenia.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn. 1978. 321 p. (p. 197).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. It is reported that a carefully constructed life-events interview indicated that patients with acute schizophrenia experience a high rate of events in the 3 weeks prior to onset. However, this cannot be explained by the events being caused by the developing illness, as such events were excluded. Long standing family tension increased susceptibility to relapse following a life-event, and phenothiazine drugs reduced the risk. It is noted that patients who stopped drugs in an apparently healthy frame of mind were liable to relapse some weeks or months later without any increased rate of events. (Journal abstract modified)

003823 Hall, Richard C. W.; Fox, Janice; Stickney, Sondra K.; Gardner, Earl R.; Perl, Mark. University of Texas Health Science Center, P.O. Box 20708, Houston, TX 77205 **Anticholinergic delirium: etiology, presentation, diagnosis and management.** Journal of Psychedelic Drugs. 10(3):237-241, 1978.

The potentiation of the anticholinergic effects of one drug by another as a cause of psychosis is discussed. A central anticholinergic syndrome (CAS) and its forms of presentation, etiology, pharmacology, and management are defined. The CAS is frequently seen in patients who injest what they consider to be safe over the counter sedative/hypnotics. It may also occur in children following the therapeutic administration of anticholinergic drugs, or subsequent to the accidental ingestion of medicinal agents, household chemicals, or poisonous plants. In the geriatric population, in patients with organic brain disease, and in the mentally retarded, the syndrome may result from ordinary doses of psychotropic medications. It is concluded that the CAS is readily reversed with early diagnosis and treatment. However, if misdiagnosis delays treatment, the syndrome can be life threatening or produce psychiatric findings suggestive of primary psychiatric disease and, therefore, result in death or inappropriate institutionalization. 24 references.

003824 Hall, Richard C. W.; Gardner, Earl R.; Perl, Mark; Stickney, Sondra K.; Pfefferbaum, Betty. University of Texas Health Science Center, P.O. Box 20708, Houston, TX 77025 **Psychiatric and physiological reactions produced by over-the-counter medications.** Journal of Psychedelic Drugs. 10(3):243-249, 1978.

The more frequent adverse psychiatric reactions to over the counter medications such as sedative/hypnotics, internal analgesics, cold and antitussive agents, and cathartics, are discussed.

These adverse reactions occur for several reasons: 1) most over the counter medications contain several ingredients; 2) many of the medications can be used for multiple symptoms; 3) label instructions are often unclear; 4) the public considers over the counter medications to be safe since they believe the government would not allow sale of a dangerous product; and 5) future sales of the product rely on the patient being able to feel an effect, thus encouraging the addition of unnecessary agents to provide a ""kick" that the patient can detect. The populations most at risk for side-effects and adverse reactions are children, the elderly, patients using prescribed and over the counter medications concurrently, and patients with medical histories of psychiatric illness. Specific treatment measures are outlined. 11 references.

003825 Himmelhoch, Jonathan M.; Licata, Sandra; May, Susan; Neil, John F.; Connors, C. Keith. Western Psychiatry Institute and Clinic, Pittsburgh, PA **Age dementia, dyskinesia and lithium response.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 28).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. In a study of 80 patients over 55 in an affective disorders clinic, the influence of several variables on the response to lithium treatment was calculated. The coexistence of hard neurological illness with manic depressive illness had a devastating detrimental effect on response to lithium treatment and was highly associated with the development of neurotoxicity. Preexisting extrapyramidal disorders of any etiology became markedly worse upon administration of lithium salts. It is concluded that advanced age, in itself, has nothing to do with the course, outcome, and pharmacologic treatment response of manic depressive illness, and that there is a clear need for careful neurologic evaluation of older bipolar patients before they are treated with lithium salts. 2 references. (Journal abstract modified)

003826 Jeste, Dilip V.; Potkin, Steven; Sinha, Shubha; Feder, Samuel; Wyatt, Richard. Clinical Psychopharmacology Laboratory, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Tardive dyskinesia: reversible and irreversible.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 25-26).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Criteria for the diagnosis of tardive dyskinesia, differentiation between reversible and irreversible types, factors that probably predispose to each type, and the likely influence of certain medication practices on the incidence of tardive dyskinesia (TD) are discussed. A study using 286 inpatients over the age of 50 in a university hospital is reported in which 21 who had TD were followed for approximately 13 months. The study suggests the possibility that frequently interrupted drug treatment may lead to irreversible TD by affecting homeostasis to a greater extent than continuous treatment. 2 references. (Journal abstract modified)

003827 Kaufman-Diamond, Sharon. Dept. of Physiology, University of the City of Los Angeles, Los Angeles, CA **Renal toxicity of lithium: findings and mechanisms.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 105-106).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. As background for understanding renal side-effects of lithium, current understanding of how the kidney handles lithium, and how lithium affects the kidney is reviewed. Studies of slowly developing lithium-induced renal failure in animals, and the few existing reports including Scandinavian and American human cases of renal falure developing during lithidum treatment are examined. The case of a manic monozygotic twin with small kidneys, whose serum lithium peaked over 3.0meq/L on his usual dose, and whose extensive tests include membrane transport and renal biopsy results, is described. (Journal abstract modified)

003828 Major, Leslie F.; Murphy, Dennis L.; Gershon, Elliot S.; Brown, Gerald L. NIMH, National Institutes of Health, Bethesda, MD 20205 **Enzymes of amine metabolism and Antabuse psychosis.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 155-156).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The amine metabolism of 27 male alcoholic patients who were taking disulfiram (Antabuse) daily was examined. Over the course of an 8 month period, seven patients developed severe behavioral reactions to disulfiram, with psychotic symptomatology. The seven were not significantly different from the other subjects on ratings of depression, anxiety, and symptoms; however, mean plasma amine oxidase activity, mean platelet activity, and mean COMT activity were significantly different. It is concluded that severe behavioral reactions to disulfiram are associated with differences in genetically determined enzyme activities; and that the monoamines, particularly the catecholamines, are involved in the development of these psychotic reactions. 2 references. (Journal abstract modified)

003829 Moddel, Garry; Bilbao, Juan M.; Payne, David; Ashby, Peter Ashby: Toronto Western Hospital, 399 Bathurst Street, Toronto, Canada M5T 2S8 **Disulfiram neuropathy.** Archives of Neurology. 35(10):658-660, 1978.

A case report of a 35-year-old man who developed a distal sensorimotor polyneuropathy after taking disulfiram, 500mg daily for 5 months, is presented. The patient had been committed to a psychiatric hospital three years earlier for amphetamine abuse and assault. His symptoms improved after the drug therapy was discontinued. Clinical, electrophysiological, and pathological observations during the acute stage and during recovery suggest that disulfiram produced distal axonopathy. 18 references. (Autor abstract modified)

003830 Spring, Gottfried K.; Gould, Deborah J. Department of Psychiatry, St. Luke's Hospital, Cleveland, OH **Hazards of combined lithium and thioridazine use.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 29).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The potential hazards of combining lithium with thioridazine and/or other phenothiazines is emphasized. The value of the EEG in clinical psychopharmacology is noted. Specifically, the potential of the EEG in diagnosis and prevention of serious neurotoxicity during the combined use of lithium and phenothiazines is demonstrated. Two cases which illustrate that the use of lithium and thioridazine in therapeutic dosages can cause seizures, encephalopathies, and high abnormal EEGs are reported. 2 references. (Journal abstract modified)

003831 Yamada, Michio; Ishimaru, Toranosuke. Department of Neuropsychiatry, Yamaguchi University School of Medicine, Ube, Japan **""Syndrome malin"-like symptoms probably due to interaction between neuroleptics and oral antidiabetic agents.**

Folia Psychiatrica et Neurologica Japonica (Tokyo). 32(1):33-40, 1978.

Two case studies of chronic schizophrenia complicated by diabetes mellitus are reported where ""syndrome malin"-like symptoms, presumably due to the interaction between oral antidiabetic agents and neuroleptics, appeared. The symptoms included hyperpyrexia, tachycardia, blood pressure instability, disturbances of consciousness, muscle rigidity, tremor, dysphagia, salivation, and urinary incontinence. The first case, a 47-year-old man, died 10 days after admission. In the other case, a 62-year-old woman, almost all the symptoms subsided after 24 days and oral dyskinesia persisted for only 1 more month. In both cases hypoglycemia due to oral antidiabetics was not seen. In the second case, a combined regimen of oral antidiabetics and neuroleptica was later resumed after a similar set of symptoms as was seen initially reoccurred. Parenterally administered biperiden proved to be highly effective in the control of the symptoms. It is suggested that the pathogenetic mechanism of these symptoms could be explained as potentiation of the action of the neuroleptica by oral antidiabetics. 16 references. (Author abstract modified)

16 METHODS DEVELOPMENT

003832 Chang, Sidney Sin-Yih; Pandey, Ghanshyam N.; Kinard, Karl; Dekirmenjian, Haroutune; Casper, Regine; Davis, John M. Dept. of Psychiatry, Illinois State Psychiatric Institute, Chicago, IL **Pharmacokinetics of lithium: predicting optimal dosage.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 68).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The pharmacokinetics of lithium are investigated, the data gathered from research are reviewed, and a simple way of predicting the optimal dosage requirement from a plasma lithium drawn after a single acute dose is proposed. Nine inpatients were studied in either single dose or steady state studies. Based on the correlation between 12 hour or 25 hour plasma lithium concentration after the single initial dose and observed steady state plasma concentration, a formula is derived to predict the optimal dosage requirement. The results of a prospective study using this formula are presented. (Journal abstract modified)

003833 Cochran, Evelyn; Carl, Juanita; Hanin, Israel; Koslow, Stephen; Robins, Eli. Dept. of Psychiatry, Washington University School of Medicine, St. Louis, MO 63110 **Effect of Vacutainer stoppers on plasma tricyclic levels: a reevaluation.** Communications in Psychopharmacology. 2(6):495-503, 1978.

The use of Vacutainers to collect blood for the determination of plasma levels of tricyclic antidepressant drugs was evaluated. Large errors can result from use of these tubes, but these errors were minimized by limiting the time of contact between the blood and the Vacutainer stopper. For in vitro studies, the fall in plasma tricyclic levels after 30 minutes of contact between the blood and the green Vacutainer stopper averaged 25% (range -7% to-47%). However, the fall averaged only 3% (range -12% to 12%) when the tube was inverted 10 times and further contact between the blood and stopper was prevented. In studies with blood drawn from patients taking tricyclic antidepressants, the values in plasma from Vacutainers as compared to plasma from a glass syringe ranged from 79% to 109%, with an average of 96%. Results indicate that the use of green stoppered Vacutainer tubes for the collection of blood gives valid results for plasma levels of tricyclic drugs if 9ml or more of the blood are used and if contact between the stopper and blood is limited. 11 references. (Author abstract modified)

003834 Cooper, S.; Albert, J.-M.; Dugal, R.; Bertrand, M.; Elie, R. Institut National de Recherche Scientifique-Sante, 7401, rue Hochelaga, Montreal H1N 3M5, Quebec, Canada **Gas chromatographic determination of amitriptyline, nortriptyline, and perphenazine in plasma of schizophrenic patients after administration of the combination of amitriptyline with perphenazine.** Arzneimittel-Forschung (Aulendorf). 29(1):158-161, 1979.

A specific and sensitive gas chromatographic technique, using a common extraction procedure, for the determination of amitriptyline, endogenous nortriptyline, and perphenazine in plasma of schizophrenics receiving both drugs is described. Lower limits of detection are 20ng/ml, 1ng/ml, and 5ng/ml for amitriptyline, nortriptyline, and perphenazine, respectively. Amitriptyline was estimated with a flame ionization detector. Nortriptyline and perphenazine were quatitated using an electron capture detector. In individual patients, steady state plasma levels ranged from 44 to 215 ng/ml for amitriptyline, 49 to 270 ng/ml for nortriptyline, and less than 5 to 20 ng/ml for perphenazine. Steady state plasma level data for 23 patients on a combined drug regimen are presented. 21 references. (Author abstract modified)

003835 Cooper, T. B.; Robinson, D. S.; Nies, A. Rockland Research Institute, Orangeburg, NY 10962 **Phenelzine measurement in human plasma: a sensitive GLC-ECD procedure.** Communications in Psychopharmacology 2(6):505-512, 1978.

A procedure for detecting and quantifying as little as 1 picomole/ml phenelzine in the plasma of patients receiving phenelzine sulfate is described. The technique involves solvent extraction and derivative formation (heptafluorobutyrate), followed by gas/liquid chromatographic analysis using a constant current electron capture detector. The internal standard is 1-phenyl(propyl)hydrazine. Data from single 30mg dose studies in a normal volunteer and in a patient who had received 30mg/day for 6 weeks are presented. 16 references. (Author abstract modified)

003836 Donlon, Patrick T.; Hopkin, John; Tupin, Joe P. Dept. of Psychiatry, University of California, School of Medicine, 3340 V St., Sacramento, CA 95817 **Overview: efficacy and safety of the rapid neuroleptization method with injectable haloperidol.** American Journal of Psychiatry. 136(3):273-278, 1979.

The literature on the rapid neuroleptization (titration) method with i.m. haloperidol is reviewed, and recommendations are made for further research to clearly establish the effectiveness and safety of this method of neuroleptic administration. Most of the approximately 650 predominantly schizophrenic and manic patients represented in the studies calmed down rapidly on medication, and some demonstrated an early reduction in core psychotic symptoms. The medication seems to have been well tolerated in all cases, with no reported major complications. It is concluded that the method shows definite merit with agitated and belligerent patients. 20 references. (Author abstract modified)

003837 Goodwin, Frederick K.; Potter, William Z. Clinical Psychobiology Branch, National Institute of Mental Health, Rockville, MD 20857 **Imipramine levels: prediction of therapeutic dose.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC American Psychiatric Assn., 1978. 321 p. (p. 47).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The feasibility of using single loading dose of

imipramine to predict the daily dose necessary to achieve a steady state concentration in the therapeutic range was evaluated. Results confirmed earlier findings indicating a 10 fold interpatient variability in steady state levels on a standard dose, a degree of variability that is also evident in the single dose experiment. A significant correlation between the single dose kinetics and the ultimate steady state level suggests that prediction of individual dose requirements is feasible with this method. The suggestion that only free imipramine and desipramine are physiologically active and that, therefore, clinical conclusions based on total drug concentrations in plasma may be misleading is discussed and refuted by a direct comparison of plasma protein binding to brain tissue showing a far greater affinity of drug for brain than for plasma. (Journal abstract modified)

003838 Greenblatt, David J. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Predicting steady state serum concentrations of drugs.** Annual Review of Pharmacology and Toxicology. 19:347-356, 1979.

Mathematical approaches to predicting steady state serum concentrations of drugs during multiple dosing schedules are briefly reviewed, emphasizing that the particular scheme depends on the quantity and source of available kinetic data. However, the availability of a reasonably complete kinetic profile of a drug in a specific subject does not always assure accurate prediction of stead-state concentrations during multiple dose therapy. Possible explanations for inaccurate prediction are discussed. It is noted that the mathematical complexity of the approaches increases with the sophistication of the model. While complex computerized systems are costly, the cost is justified if the predictive systems leads to more rational and systematic drug use, with accompanying increases in therapeutic success and reduction in episodes of toxicity. It is suggested that cost effectiveness studies of the various methodologies are necessary to warrant such justification. 52 references.

003839 Hollister, Leo E. Veterans Administration Hospital, 3801 Miranda Ave., Palo Alto, CA 94304 **Monitoring tricyclic antidepressant plasma concentrations.** Journal of the American Medical Association. 241(23):2530-2533, 1979.

The ultility of measuring plasma concentrations of tricyclic antidepressants in the context of typical clinical practice was examined during treatment of 126 patients. Noncompliance in taking medication was suspected in 19 patients because of unusually low plasma concentrations in relation to the presumed dose. Determinations of plasma concentrations were also useful for detecting inadequate treatment as judged by levels below the presumed therapeutic range. Attempts to correlate plasma concentrations with clinical response to amitriptyline hydrochloride and nortriptyline hydrochloride failed, possibly due to the heterogeneity of depressive syndromes being treated. Plasma concentrations were correlated highly with dose in the case of amitriptyline, less so in the case of other drugs. Amitriptyline and imipramine hydrochloride generally produced plasma concentrations of the parent drug and metabolite higher in nanograms per milliliter than was the daily dose in milligrams; nortriptyline and desipramine hydrochloride did the opposite. 10 references. (Author abstract)

003840 Rambeck, B.; Meijer, J. W. A. Biochemical Dept. of the Gesellschaft fur Epilepsieforschung, Bethel, Maraweg 13, D-4800 Bielefeld-13, Germany **Comprehensive method for determination of antiepileptic drugs using a novel extraction technique and a fully automated gas chromatograph.** Arzneimittel-Forschung (Aulendorf). 29(1):99-103, 1979.

A gas chromatographic method for the simultaneous determination of the antiepileptic drugs phenytoin, phenobarbital, carbamazepine, pridone, and ethosuximide, as well as the metabolites N-desmethyl-methsuximide and phenylethylmalonamide is presented. The procedure involves a novel extraction methodology, based on the partition of drugs between an acetone/benzene mixture and a saturated aqueous ammonium sulphate solution, and a fully automated gas chromatographic procedure for peak integration, calculation, and recalibration. Absolute and analytical recoveries of the drugs from serum and reproducibility of the results were excellent. Standard curves were linear up to twice the toxic concentration in serum. Data from an internal, as well as an international, quality control scheme are presented. The method has been used in routine analysis of serum samples from 20,000 patients. 90 references. (Author abstract modified)

003841 Uhlenhuth, E. H.; Schuster, Charles R.; Fischman, Marian W. Dept. of Psychiatry, University of Chicago, Chicago, IL 60637 **Issues in evaluating the effects of psychotropic drugs on human performance measures.** Psychopharmacology Bulletin. 15(2):21-23, 1979.

In a summary of a paper presented at the session on methods and issues in human behavioral pharmacology of the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, issues in evaluating the effects of psychotropic drugs on human performance measures are discussed. The development of a laboratory designed to study the effects of psychotropic drugs in humans is described, and the effects of contingencies of reinforcement on common human test performances are compared with the effects of drugs on the same measures. It is concluded that optimal structuring of contingencies of reinforcement is a crucial part of experimental design in evaluating the effects of psychotropic drugs on commonly used performance tests. 2 references.

003842 Van Putten, Theodore; Marder, Stephen R.; May, Philip R. A. Dept. of Psychiatry, Brentwood VA Hospital, Los Angeles, CA **Drug and milieu therapy in schizophrenia.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 195-196).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The advantages or disadvantages of drug and/or milieu therapy for schizophrenics is discussed. It is suggested that the drug history can identify those schizophrenics whose response to antipsychotic drugs is best investigated in hospital: dysphoric responders, habitual noncompliers, and those schizophrenics whose illness is only modestly sensitive to antipsychotic drugs. Milieu therapists can make the greatest contribution by using their psychological understanding of the patient to achieve an optimal chemotherapy and to integrate this with a suitable discharge plan. A test dose approach to treatment is recommended. (Journal abstract modified)

003843 Veith, Richard C.; Raisys, Vidmantas A.; Perera, Cherill. Geriatric Research, Education, and Clinical Center, Seattle VA Hospital, Seattle WA **The clinical impact of blood collection methods on tricyclic antidepressants as measured by GC/MS-SIM.** Communications in Psychopharmacology. 2(6):491-494, 1978.

Blood samples were obtained from 35 patients being treated with imipramine hydrochloride, amitriptyline hydrochloride, or doxepin hydrochloride. Aliquots from each sample were divided into glass tubes, Vacutainer tubes, and Venoject tubes and inverted for at least 30 minutes. Plasma levels of the tricyclic antidepressants and their active metabolites were consistently and

significantly reduced in the Vacutainer tubes compared to the glass or Venoject tubes. There was no significant difference between the glass and Venoject collection system. It is concluded that the Vacutainer-induced reduction has a significant impact on the interpretation of plasma tricyclic antidepressant levels in the clinical setting. 11 references. (Author abstract modified)

003844 Zilm, D. H.; Sellers, E. M. Human Responses Laboratory, Addiction Research Foundation, Toronto, Ontario, Canada **Quantitative assessment of dependence liability to narcotics in man.** Clinical Pharmacology and Therapeutics. 25(2):255, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. A method for measuring the level of physical dependence on opiates in human subjects was developed. Hand tremor, trapezius electromyogram, heartrate, blood pressure, skin temperature, and respiratory rate were monitored in eight addicts to obtain an objective-index (OI) of naloxone induced withdrawal severity, following administration of increasing doses of naloxone. Yawning, goose-flesh, feeling of temperature change, nausea, muscle aching, sweating, lacrimation, restlessness, and stomach pain were scored by a trained observer to obtain a subjective index (SI) of withdrawal. The OI and SI were in good agreement in assessing withdrawal severity, but the OI was more sensitive and discriminating. The magnitude of the OI was related to the duration of the current cycle of drug abuse by addicts, and thus may provide a sensitive measure of physical dependence. (Author abstract modified)

17 MISCELLANEOUS

003845 Abuzzahab, F. S., Sr. Department of Psychiatry, University of Minnesota Hospital, Minneapolis, MN **Twenty-five years of psychopharmacology.** Minnesota Medicine. 62(2):79-80, 1979.

In a paper presented at the Symposium on 25 years of Psychopharmacology, in Minneapolis, in June 1977, the major discoveries in the clinical use of psychoactive drugs are outlined. The topics covered include: the introduction of chlorpromazine, the impact of psychotropic drugs on the family practice, the introduction of depot phenothiazines, current trends in the treatment of extrapyramidal disorders, the impact of psychotropic drugs on research in psychiatry, the treatment of affective disorders, the use of benzodiazepines in outpatient treatment, and, the status of the food and drug regulation of clinical psychopharmacology. 7 references.

003846 Alvan, G.; Odar-Cederlof, I. Department of Clinical Pharmacology, Karolinska Institutet, Huddinge Hospital, S-141 86 Huddinge, Sweden **The pharmacokinetic profile of oxazepam.** Acta Psychiatrica Scandinavica. Supplementum 274:47-55, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The pharmacokinetic properties of oxazepam, which has the shortest half-life of the benzodiazepines and does not form any active metabolites, are reviewed in healthy volunteers, uremic patients and dogs. In normal man half-lives between 6 and 25 hours were obtained. The drug was completely absorbed and steady-state concentrations developed after multiple doses. In uremic patients the terminal half-life of oxazepam in plasma was prolonged to 24-91 hours. However, the clearance of oxazepam was not significantly decreased in this patient group and similar doses, as in normal subjects, are recommended. There was a marked retention of the water soluble oxazepam conjugate in the uremic patients as in dogs and secondary plasma concentration peaks were seen after single doses. In uremic patients, fecal excretion of oxazepam was recovered in the bile. It is concluded that enterohepatic cycling may occur in the dog and in uremic patients. 9 references. (Author abstract)

003847 Ananth, J.; Callanan, T. S. Royal Victoria Hospital, 1025 Pine Avenue W, Montreal, Quebec, H3A 1A1, Canada **Importance of endorphins in psychiatry.** Comprehensive Psychiatry. 23(3):246-255, 1979.

Research on the mechanism of action, function, and psychiatric uses of endorphins is reviewed, emphasizing the efforts of various researchers to demonstrate the existence of specific opiate receptor binding sites on cell membranes and to further characterize these new substances. The available data confirm the probable existence of endogenous opiate-like substances and the fact that they are more or less specific to particular opiate receptors. Future research should further investigate their pain modulating properties in different types of patients, study endorphin-psychopathologic correlations in various psychiatric disorders, and assess endorphin levels in drug addicted and alcoholic patients. A technique for estimating endorphin in body fluids is badly needed. 84 references.

003848 Ballinger, B. R. Royal Dundee Liff Hospital, Dundee DD2 5NF, Scotland **Simulated discharge system of prescription and long-term drug treatment in a psychiatric hospital.** Acta Psychiatrica Scandinavica (Kobenhavn). 59(1):40-44, 1979.

In a survey of long-term drug treatment in a simulated discharge system, the drug sheets of patients resident in a psychiatric hospital for more than 1 year were reviewed. Although under the simulated discharge system drug sheets were rewritten every 12 weeks, there was only a slight increase in prescription changes at the time of renewal. Thirty-five percent of prescriptions had been unchanged for 1 year and 4.3% for 5 years. A high proportion of long-term prescriptions were for purgatives, hypnotics, and neuroleptics. 4 references. (Author abatract modified)

003849 Bernstein, Jerrold G. Harvard Medical School, Massachusetts General Hospital, Boston, MA 02114 **Drug treatment of psychosis in the general hospital.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 204).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The use of antipsychotic drugs in the general hospital setting is discussed. Proper use of these drugs includes an awareness of situations where these drugs should generally be avoided such as drug-induced psychoses and drug withdrawal syndromes. A favorable response to antipsychotic chemotherapy depends upon the choice of the appropriate drug and must take into account the potential interactions between this group of drugs and the underlying medical condition of the patient as well as other medication that the patient may be receiving. The potential drug/drug and drug/illness interaction of antipsychotic drugs are demonstrated by reference to actual cases. Clinical aspects of maintenance antipsychotic drug treatment during the course of acute medical and surgical illness is also discussed. (Journal abstract modified)

003850 Bernstein, Jerrold G. 227 Babcock St., Brookline, MA 02146 **Antipsychotic drugs in the general hospital: uses and cautions.** Psychosomatics. 20(5):335, 339, 342-343, 347, 1979.

The use of antipsychotic drugs in medically ill hospitalized patients is discussed. For these patients antipsychotic drugs have three major indications: 1) treatment of acute psychosis; 2) maintenance of schizophrenia; and 3) treatment of agitation, anxiety, and confusion. The drugs are divided into five groups and their common ability to block dopamine is discussed. Their effects on prolactin levels, hypotension, anticholinergic action, older patients, ECG changes, seizure threshold, liver disease, and sedative/hypnotic withdrawal are outlined. A nine heading list of guidelines for deployment of these drugs in the general hospital is provided. 8 references.

003851 Bertilsson, L. Department of Clinical Pharmacology, Karolinska Institute, Huddinge Hospital, S-141 86 Huddinge, Sweden **Mechanism of action of benzodiazepines -- the GABA hypothesis.** Acta Psychiatrica Scandinavica. Supplementum 274:19-26, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. Studies on the biochemical effects of benzodiazepines and their influence on a number of neurotransmitters such as acetylcholine, catecholamines, serotonin, glycine and gama-aminobutyric acid are reviewed. Special emphasis is put on the recent hypothesis that the effect of benzodiazepines

is, at least partly, elicited by a stimulation of gamma-aminobutyric acid receptors. It was found that the GABA agonist muscimol and diazepam both decrease the GABA turnover in two rat brain nuclei, N. accumbens and N. caudatus, but had no effect in globus pallidus. This indicat that the influence diazepam on GABA neurons is similar to a GABA agonist. 24 references. (Author abstract modified)

003852 Biggs, John T.; Ziegler, Vincent E. Dept. of Psychiatry, Washington University, St. Louis, MO 63130 **Tricyclic plasma levels in clinical perspective.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 48).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The multiple factors that can affect tricyclic antidepressant (TCA) plasma measurements are reviewed for the benefit of the clinician. These include blood collection methods, sampling time following the last dose of medication, and analytical techniques. Clinicians must also be aware of the basic principles of TCA pharmacokinetics to adequately interpret TCA plasma measurements. Plasma TCA measurements are of little value in the depressed patient responding to TCA therapy; however, in the nonresponder such measurements allowing for rational dosage adjustment may be the difference between treatment success and failure. 3 references. (Journal abstract modified)

003853 Bliding, A. Department of Social Psychiatry, Lund University, St. Lars Hospital, Lund, Sweden **The abuse potential of benzodiazepines with special reference to oxazepam.** Acta Psychiatrica Scandinavica. Supplementum 274:111-116, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. Benzodiazepine dependence, particularly that concerning oxazepam in the treatment of alcoholic patients, a high-risk group for drug abuse, is discussed. It is asserted that extensive use of oxazepam has shown that the dependence producing potential of this drug is remarkably low, only four cases of dependence having been encountered over many years. Even abrupt withdrawal of oxazepam does not normally precipitate an abstinence syndrome. Three reasons are proposed to account for the exceptionally low abuse potential of oxazepam, the first being considered to be the most important: 1) its onset of central nervous system activity is gradual, so there is no sudden intoxication effect; 2) it tends to cause dizziness at high dosages, discouraging the patient to increase the dose; and 3) because it has a short half-life and no major active metabolites, intermittent therapy, periodically allows the complete elimination of the drug from the body. 12 references. (Author abstract modified)

003854 Bloom, Floyd E.; Siggins, G. R.; Schultz, J. E.; Henriksen, S. J. Arthur Vining Davis Center for Behavioral Neurobiology, Salk Institute, La Jolla, CA **Catecholamine transmitter systems.** In: Schoolar, J., The kinetics of psychiatric drugs. New York, Brunner/Mazel, 1979. 324 p. (p. 63-75).

A paper on catecholamine transmitter systems read at the 11th Annual Symposium on the Kinetics of Psychiatric Drugs, held in Houston, November 1977, is presented. The primary interactions of psychiatric drugs with catecholamine synapses in the brain are explored. Topics discussed include: the organization of neuron-drug interactions, general drug actions, transmitter specific drug actions, transmitter specific drug actions on synaptic receptors, norepinephrine and psychiatric drug kinetics, neurochemical and electrophysiologic effects of tricyclic antidepressants and lithium, iontophoretic tests on cerebellar Purkinje cells, iontophoretic tests of lithium on hippocampal neurons, and iontophoretic tests of desmethylimipramine (DMI) on cerebellar and hippocampal neurons. Three hypotheses are advanced from these studies: 1) that the functioning brain does not tolerate the perturbations produced by even specific synaptic actions of drugs, but it responds by setting into motion cellular modulatory events that attempt to restore the operation of the system to more normal values; 2) that some defect in molecular dynamics produces psychotogenic receptors which have for one or another reason lost their ability to be modulated back into equilibrium; and 3) that the effects of lithium and DMI which are critical to the therapeutic effect may not be those revealed on cerebellar neurons, despite the ease of evaluating these test cells. 51 references.

003855 Bobon, D. P. Clin. Psychiat. Universitaat, Rue Saint-Laurent 58, B-4000 Liege, Belgium **Tentative clinical profile of bromperidol.** Acta Psychiatrica Belgica (Bruxelles). 78(1):190-196, 1978.

In a paper presented at the International Symposium on Bromperidol, held in Bruges, Belgium, November 1977, a tentative clinical profile of bromperidol is discussed. A six point scoring scale for six parameters of action was proposed for determining the physiognomy of neuroleptics, and methodological considerations in subject selection, dosage determination, and route of administration were examined. The six parameters are: ataraxic effect, antimanic effect, antiautistic effect, antidelusional effect, extrapyramidal effect, and adrenolytic effect. Research is examined within the context of these six parameters in a disucssion among Symposium participants. 2 references.

003856 Boutin, Roger. 43 Bruyere, Ottawa, Ontario K1N 5C8, Canada **Psychoactive drugs: effective use of low doses.** Psychosomatics. 20(6):403-405, 409, 1979.

The tendency toward the use of lower doses of psychoactive drugs, supported by present day ethical and medicolegal trends and reinforced by the rising voice of consumerism, is discussed. The literature on the effectivenesss of low doses of psychoactive drugs is reviewed. In addition to being effective in many cases, low doses may arouse less patient resistance and leave the patient better able to participate in his treatment. The physician and patient may find themselves involved in a beneficial reappraisal of treatment goals: from attempted quick cure, which may have more drastic effects than expected, using high drug doses to helping the patient to adjust to and live with his problems using low doses. 24 references. (Author abstract modified)

003857 Cassem, Ned. H. Psychiatric Consultation Liaison Service, Massachusetts General Hospital, Boston, MA 02114 **Intravenous use of haloperidol for acute delirium in intensive care settings.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 204-205).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. In a series of 15 patients recovering from cardiac surgery the use of intravenous haloperidol was studied. Haloperidol, when administered intravenously, produced no observable behavioral reaction in the patient, and calming effects appeared only after at least 10 to 20 minutes had elapsed. All but two patients improved. In another two cases oversedation occurred. Haloperidol appears to be a safe and effective antipsychotic agent for intravenous use in acutely agitated intensive care unit patients immediately after cardiac surgery. (Journal abstract modified)

003858 Cole, Jonathan O. McLean Hospital, Belmont, MA **Biological approaches to treatment-resistant depression.** Continuing

medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 167).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Biological therapies for treatment resistant depression utilizing current available modalities are reviewed. These include selective use of specific tricyclic antidepressants, monoamine oxidase inhibitors, and lithium carbonate, as well as the use of drug combinations of the above agents. Methods for limiting drug side-effects are considered. It is concluded that an overall strategy for evaluating patients who appear to be treatment resistant and for planning sequential approaches is important. (Journal abstract modified)

003859 Cooperstock, Ruth. Social Studies Department, Addiction Research Foundation, Toronto, Ontario, Canada **A review of women's psychotropic drug use.** Canadian Journal of Psychiatry (Ottawa). 24(1):29-34, 1979.

The consumption of psychotropic drugs by women and the characteristics of high use groups are explored. It is stated that women are more likely than men to be both frequent and steady users of psychotropic drugs, that women are more likely to seek help from physicians and request drug prescriptions, and that physicians are more likely to offer tranquilizers to women than to men. Psychotropic drug use has been found to be related to work status, age, use of physician services, and subjective ratings of poor health. The peak use of minor tranquilizers is reported for women in their middle years. 34 references.

003860 Corbett, Lionel. Rush Medical School, Chicago, IL **Impact of depot neuroleptics on psychiatry.** Minnesota Medicine. 62(2):97-100, 1979.

In a paper presented at a Symposium on 25 Years of Psychopharmacology, in Minneapolis, in June 1977, the impact of depot neuroleptics on psyciatry is discussed. The advent of phenothiazines revolutionized the management of schizophrenia, and maintenance therapy with these compounds often prevents relapse. The use of depot neuroleptics reduces the rate of drug defaulting and further helps to maintain such patients in the community. The depot preparation is also valuable when failure to absorb oral medication occurs, and offers the additional advantages of economy, improved morale and reduced total drug dosage. It is concluded that depot butyrophenones and thioxanthenes are also becoming available, thus greatly extending the range of applicability of this modality. 14 references. (Author abstract modified)

003861 Davis, John M.; Dysken, Maurice W. Illinois State Psychiatric Institute, 1601 W. Taylor St., Chicago, IL 60612 **Impact of psychotropic drugs on research in psychiatry.** Minnesota Medicine. 62(2):109-116, 1979.

In a paper presented at a Symposium on 25 Years of Psychopharmacology, in Minneapolis, in June 1977, the impact of psychotropic drugs on research in psychiatry is discussed. Five major consequences of the impact of these drugs are discussed: the establishment of a new methodology, the dopamine hypothesis of schizophrenia, the norepinephrine, and serotonin theories of depression, and, the research on blood levels of psychotropic drugs in psychiatric patients. As a consequence of the discovery of psychotropic drugs, the conceptual framework for psychiatric illness has undergone substantial change. It is concluded that these differences apply not only to biological aspects of the treatment of mental disorders, but also include such consequences as changes in their social and psychological treatments. 12 references. (Author abstract modified)

003862 Davis, John M.; Kinard, Carl; Chang, Sidney; Casper, Regine; Dysken, Maurice; Garver, David. Dept. of Research, Illinois State Psychiatric Institute, Chicago, IL **Use of lithium in psychiatry.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 66).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. An overview is given of the clinical use of lithium in psychiatry, reviewing both established uses and newer or more experimental ones. Lithium is clearly accepted for use in acute mania and for prophylaxis against bipolar disease. Its use in unipolar disease, however, is more controversial. All existing control studies are reviewed in order to judge whether or not lithium is useful for prophylaxis in unipolar illness. The usefulness of lithium in various psychiatric conditions is updated and reviewed, along with indications and strategies for use. In the case of the newer indications, an attempt is made to show the state of the art with respect to how well established these indications are. (Journal abstract modified)

003863 Doberauer, W.; Doberauer, B. Krankenabt. Chron. Altersl., Pflegeh. Baumgarten, Vienna, Austria **/Iatrogenic depression in old age./** Iatrogene Depressionen im Alter. Aktuelle Gerontologie. 8:139-141, 1978.

The growth of depression in old patients is invariably based on anxiety. In part these depressions are avoidable when resolved by iatrogenic means. For example, psychopharmaceutical agents, hormones, antihypertonics, antihistamines, and antirheumatism agents may present potential depression hazards and should be carefully prescribed by the physician. (Journal abstract)

003864 Dugas, Michel. Faculty of Medicine, Lariboisier-Saint Louis, Paris, France **/Psychotropic chemotherapy in the child, yesterday, today, and tomorrow./** Chimiotherapie psychotrope chez l'enfant, hier, aujourd'hui demain. Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assoc., 1978. 321 p. (p. 162).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The use of psychotropics for the child is discussed. It has been found that tranquilizers, neuroleptics, antidepressants are too easily prescribed by the generalist and the pediatrician and not enough by the child psychiatrists who are more motivated to approach the psychodynamics of the child through the study of the positive or lateral effects of the psychotropics. In Europe, the amphetamines are not used in the treatment of the hyperkinetic child. It is concluded that the future is not so much to discover specific psychotropics of the child and the different products utilized for the adults, as to study the repercussion of the psychotropics in the development of the central nervous system (including hormones). (Journal abstract modified)

003865 Dysken, Maurice W.; Chang, Sidney S.; Casper, Regina C.; Davis, John M. Dept. of Psychiatry, University of Chicago, Pritzker School of Medicine, Chicago, IL **Barbiturate-facilitated interviewing.** Biological Psychiatry. 14(2):421-432, 1979.

The relevant American literature in barbiturate interviewing is summarized and examined to determine the place of barbiturate interviewing in the current practice of psychiatry. Methodological issues are critically evaluated and a search is conducted for clinically useful applications that may have been forgotten or overlooked. The results of a recent double-blind placebo controlled study assessing the clinical usefulness of sodium amobarbital interviewing in hospitalized, psychiatric patients are includ-

ed. It is suggested that today's clinican should consider barbiturates for mobilizing stuporous, catatonic patients, for aiding in the diagnosis of intellectual impairment, and for lessening negative effect associated with known stressful experiences. 63 references.

003866 Ebert, Michael H. Section on Experimental Therapeutics, Laboratory of Clinical Science, NIMH, Bethesda, MD 20205 **The clinical neuropharmacology of memory.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 206).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Studies on adrenergic and cholinergic influences on human information processing are reviewed. Data indicate that: amphetamine improves the cognitive function of hyperactive children, L-dopa administered in large doses to depressed patients improves verbal learning, and scopolamine interferes with memory storage. The administration of single doses of drugs with relatively specific actions on various neurotransmitter systems to normal controls or patients with disordered memory function is discussed. Information processing in early dementias that have a known neurochemical pathology such as Huntington's disease and Parkinson's disease is suggested as a fertile area for investigation. (Journal abstract modified)

003867 Fann, W. E.; Thornby, J. I.; Richman, B. W.; Miller, E. E. Department of Psychiatry, Baylor College of Medicine, Houston, TX **Psychotropics, smoking, and orthostatic hypotension.** Clinical Pharmacology and Therapeutics. 25(2):223-224, 1979.

A summary of a paper read at the 80th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, held in Kansas City, March 1979, is presented. Blood pressure (BP) and pulse parameters were compared in 55 hospitalized psychiatric patients on psychotropic drugs and 75 general medical and surgical patients. A second group of 60 psychiatric inpatients on psychotropic drugs and ranked on the basis of smoking habits was also examined. No differences in BP parameters were found between psychiatric and medical/surgical patients, but the pulse rate increase upon standing was significantly greater among psychiatric patients. Smokers appeared to be protected against BP drops on standing in a dose related fashion: heavy smokers showed less BP drop than light smokers and nonsmokers. It is suggested that smoking tobacco may interfere with the action of the psychotropics, possibly through accelerating drug metabolism or through direct autonomic effects of nicotine. (Author abstract modified)

003868 Fincher, Jack. no address **Natural opiates in the brain.** Human Behavior. 8(1):28-32, 1979.

The discovery of endorphin and research on it are discussed. Research leading to the development of naloxone and enkaphalin is discussed in terms of the notions of stereoisomers and biomimicry as background to the discovery of endorphin. Although it had been hoped that endorphin would be nonaddictive, it proved to be as addictive as morphine. Speculation concerning physical mechanisms in response to heroin and the evolutionary purposes of opiate receptors relates to current research. Current research problems are discussed. It is concluded that the field of endorphin research is a paradox with no clear answers emerging at this time.

003869 Fouks, L.; Pinalie, B.; Porcheron, J. B.; Cardon, A. Centre psychotherapeutique de la Vienne, Poitiers, France **The clinical activity of oxazepam.** Acta Psychiatrica Scandinavica. Supplementum 274:99-103, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The use of oxazepam in anxiety neurosis, depressive neurosis, psychotic disorders, alcoholism, and insomnia is discussed. It is asserted that oxazepam has distinguished itself clinically from other benzodiazepines by virture of its excellent tolerance, due to metabolic and pharmacokinetic differences rather than an intrinsically more favorable toxic to therapeutic dosage ratio. Because of its excellent tolerance, dosage is very flexible, and it is, therefore, possible to utilize oxazepam in a wide spectrum of anxiety related disorders including the psychoses. 17 references. (Author abstract)

003870 Gallant, Donald M.; Force, Robert. Department of Psychiatry, Tulane University, School of Medicine, New Orleans, LA 70112 **Legal and ethical issues in human research and treatment: psychopharmacologic considerations.** New York, SP Medical & Scientific Books, 1978. 186 p.

Papers on ethical and legal considerations for psychopharmacologic research read at a symposium sponsored by the American College of Neuropsychopharmacology, held in December 1976, are presented. It is argued that medical treatment and research, although traditionally subject to self-imposed conformance to ethical principles, have now become the object of significant legal constraints including legislation, administrative regulation, and litigation. The future of neuropsychopharmacologic research and treatment is discussed in terms of the resolutions best for society, the permissible and the unjust use of humans in experiments, implied consent, proof of efficacy and safety of drugs, and the increased legal regulation and psychiatric practice are identified and discussed. It is suggested that obligations to the patient, duty to humanity, and adherence to truth should be maintained without seriously hampering the acquisition of scientific knowledge.

003871 Garattini, S. Instituto di Richerche Farmacologiche 'Mario Negri', Via Eritrea, 62, I-20157 Milan, Italy **Biochemical and pharmacological properties of oxazepam.** Acta Psychiatrica Scandinavica. Supplementum 274:9-18, 1978.

A paper presented at the Oxazepam Symposium titled pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. Laboratory work carried out to characterize the action of oxazepam is summarized. Oxazepam is the final metabolic product in vitro and in vivo of a large number of pharmacologically active benzodiazepines. Oxazepam shows antimetrazol activity varying in intensity and duration according to the animal species considered. This difference is in part related to a different sensitivity and in part due to a different disposition of oxazepam. Particularly relevant is the difference in biliary excretion by various animal species. Oxazepam is currently available as a racemate but two optical isomers can be separated as succinate half esters. The positive form appears to be more active than the negative form, probably because more oxazepam is released from the positive than the negative isomer in vivo. In vitro studies confirm that the liver hydrolyzes the positive oxazepam succinate half ester more than the negative form. Finally, it is shown that oxazepam, similarly to other benzodiazepines, increases aggressiveness in male mice during chronic treatment. 32 references. (Author abstract modified)

003872 Gelenberg, Alan J. Dept. of Psychiatry, Harvard Medical School, Boston, MA 02115 **Antidepressants in the general hospital.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 204).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Common problems concerning the use of antidepressants in a medical inpatient setting that often lead to inadequate patient response are discussed. These pitfalls are: use of antidepressants in attempts to treat sadness rather than depression, prescribing too low a dose, allowing too short a course of treatment, failure to deal well with adverse reactions, and inadequate information concerning antidepressant interactions with other drugs or medical illness. These problems are emphasized in reference to monoamine oxidase inhibitors and tricyclics. The pharmacology of both antidepressant classes are reviewed and clinical recommendations given. (Journal abstract modified)

003873 Gerbino, L.; Gershon, S. New York University Medical Center, School of Medicine, New York, NY 10016 **Status of psychopharmacology teaching and practice impact on health care delivery.** Psychopharmacology Bulletin. 15(2):55-58, 1979.

In a summary of a paper presented at the session on training/education issues in psychopharmacology at the Annual Meeting of the New Clinical Drug Evaluation Units of NIMH, held in Key Biscayne, FL, May 1978, the status of psychopharmacology teaching and practice and the impact on health care delivery is described. Several studies of prescribing practices for psychotropic drugs are reviewed, and upgraded instruction concerning these agents at all levels of medical practice is urged. 18 references.

003874 Goldfrank, Lewis; Bresnitz, Eddy. North Central Bronx Hospital, Bronx, NY **Phenothiazines.** Hospital Physician. 15(6):42-45, 48-49, 53, 1979.

The classification, pharmakinesis, and toxic effects of phenothiazines and some pitfalls to avoid in the management of a phenothiazine drug overdose are discussed. The phenothiazines are major tranquilizers used mainly in the treatment of psychotic disorders and can be given orally, intramuscularly, or intravenously. Gastrointestinal absorption is diminished due to drug binding in the gut wall. The phenothiazines are anticholinergics and antidopaminergins to varying degrees. The central nervous system is the site of the most common adverse effects of the phenothiazines; the effects are generally reversible and are dose related. 12 references.

003875 Goodwin, Donald W. Dept. of Psychiatry, University of Kansas Medical Center, Kansas City, KS **Lithium for alcoholism.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 67).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. An overview of the research on lithium treatment for alcoholism is presented. Data regarding a possible connection between alcoholism and affective disorders are reveiwed, including terminological problems, studies in which alcohol was administered to alcoholic and depressed patients, the relationship between thyrotropine releasing hormone and depression or alcoholism, and a genetic link between affective disorders and alcoholism. Cellular and neurochemical interactions between lithium and ethanol are discussed. Clinical trials where lithium was given to alcoholics and nonalcoholics are reviewed. Two studies indicate that lithium is useful in treating depressed alcoholics; a third suggests that lithium has no effect on nonalcoholics but may diminish alcohol preference in alcoholics. Emphasis is placed on further work that will elucidate alcoholic/lithium interaction and confirm studies indicating that lithium is useful in alcoholism. (Journal abstract modified)

003876 Greenberg, Joel. Science News, 1719 N Street, N.W., Washington, DC 20036 **The brain: holding the secrets of behavior.** Science News. 114(22):362-363, 366, 1978.

Recent research on the role of brain neurochemical and structural systems in the etiology and treatment of schizophrenia and depression is reviewed, based on interviews with a number of prominent neuroscientists. Most studies implicate dopamine in schizophrenia, but it is not clear whether the dopamine abnormalities are causes or effects of the illness. Since schizophrenia and depression appear to be clusters of related disorders rather than single disease entities, it does not appear possible to devise therapeutic strategies that will be successful in every case.

003877 Greenblatt, David J. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Antianxiety agents in the general hospital.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 203-204).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Anxiety, commonly experienced by hospitalized patients, and its treatment with benzodiazepine derivatives are discussed. It is noted that this anxiety is frequently an entirely appropriate response which frequently becomes less severe as the patient gains understanding of its source. Although benzodiazepines have similar effects upon the nervous system, they may appear to have different clinical actions due to pharmacokinetic variations. Understanding of these pharmacokinetic differences can lead to more rational antianxiety therapy with benzodiazepines. (Journal abstract modified)

003878 Gualtieri, C. Thomas; Staye, Jeannette. Dept. of Psychiatry, Division of Child Psychiatry, North Carolina Memorial Hospital, Chapel Hill, NC, 27514 **Withdrawal symptoms after abrupt cessation of amitriptyline in an eight-year-old boy.** American Journal of Psychiatry. 136(4A):457-458, 1979.

A case report of a child who seemed to suffer an amitriptyline withdrawal reaction is presented, and the use of the tricyclic antidepressant with children is discussed. The patient, an 8-year-old boy, developed severe gastrointestinal symptoms when amitryptyline was stopped abruptly, and there was no evidence to suggest a toxic or infectious origin for his nausea and vomiting. It is cautioned that: 1) amitryptyline should not be used in the treatment of hyperkinesis when other more familiar drugs are available, and 2) children who are treated with amitriptyline probably should not be abruptly withdrawn from the drug. 10 references.

003879 Gullick, Eugenia L.; King, Lucy Jane. Dept. of Psychiatry, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298 **Appropriateness of drugs prescribed by primary care physicians for depressed outpatients.** Journal of Affective Disorders (Amsterdam). 1(1):55-58, 1979.

One hundred thirty nine middle-class individuals seeking marital and sexual counseling were interviewed as to psychoactive drug use. Thirty percent had diagnosable psychiatric illness, including 14% who had depressions at the time of interview. Those with psychiatric syndromes were significantly more likely to have received diazepam and similar drugs than antidepressants. The same was true for those with other syndromes but in many of these cases, diazepam or other antianxiety agents seemed more appropriate. It is concluded that affective disorder might well be the psychiatric syndrome for which these drugs are most often inappropriately prescribed, a matter of concern in an illness which is potentially fatal. 7 references. (Author abstract modified)

003880 Hackett, Thomas P. Massachusetts General Hospital, Boston, MA 02114 **The use of stimulant drugs in medicine.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 205).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. A variety of situations in which general hospital psychiatry has found amphetamines to be of value are reviewed. Stimulant medication has been used with benefit in the following conditions: to mobilize the unwilling and lethargic rehabilitation patient, to mobilize the bedridden postoperative patient to ambulate, as a potentiator for narcotics, given in conjunction with sodium amytal in the amytal interview, to restore a transient sense of well-being in patients with reactive depressions, to enhance conversational exchange in psychotherapy with a depressed patient, to implement activity in individuals who are beginning to socialize following a prolonged grief reaction, and to improve the mood of the terminal patient. Contraindications, doses, and schedules of administration of stimulants are discussed. 2 references. (Journal abstract modified)

003881 Hartmann, Klaus; Allison, James; Hartig, Paula. Box 94728, Lincoln, NE 68509 **Measuring prescribing practices in a state mental hospital system.** Hospital & Community Psychiatry. 30(7):467-469, 1979.

To determine the degree to which Nebraska's three state mental hospitals complied with recognized guidelines for prescription of psychotropic medications, a study was made of 1326 drug orders issued over a 5 year period. The prescribing practices in the hospital were then reviewed in relation to the guidelines in areas of polypharmacy, daily dose frequency, time of day, use of p.r.n. orders, drug form, dosages for children and the elderly, dosages during acute and stabilized stages of illness, and brand versus generic names. Important findings include: 1) a decrease in polypharmacy, 2) a rise in patients receiving only one or two doses a day, mostly at bedtime, 3) very few p.r.n. orders, 4) most medications in pill form, 5) lower dosages for the elderly, and 6) virtually all prescribing by brand names. Areas of progress in drug use practices are highlighted, and areas for improvement are identified. 20 references. (Journal abstract modified)

003882 Hawkins, David M.; Thompson, Ervin M. Dept. of Psychiatry, Duke University Medical Center, Durham, NC **Reactive affective cycles and lithium: a caveat.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 29-30).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Two cases are reported to demonstrate the phenomenon of reactive affective cycles, their clinical presentation, and the problems arising from treatment with medication. The inappropriate use of lithium for treatment of patients with cyclic depressions that are not the result of biochemically triggered affective cycles but instead are a cyclic combination of reactive depression and an interpersonal maneuver or depressive stance that results from an intrapsychic and interpersonal dynamic cycle is noted. Attention is given to the structure of cycles of interpersonal behavior and to the common elements found in the patients who demonstrate them. The enactment of these patterns in therapy is described, both in terms of transferance/countertransference with the therapist and their presentation in the group therapy setting. Finally, treatment strategies are suggested. 2 references. (Journal abstract modified)

003883 Heiser, Jon F.; Brooks, Ruven E.; Ballard, Joan P. Department of Information and Computer Science, University of California at Irvine, Irvine, CA 92664 **A computerized psychopharmacology advisor.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 216).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The existent, developing, and potential applications of computerized systems for education and consultation in clinical psychiatry are discussed. A computerized psychopharmacology advisor is described which is capable of evaluating and diagnosing psychiatric patients, suggesting pharmacological treatment, monitoring a patient's clinical course, and indicating changes in treatment. Completely interactive, this system explains its reasoning in terms that are accessible to users of varying sophistication, can have its behavior completely analyzed, and is easily modified and updated. (Journal abstract modified)

003884 Heninger, George R. Dept. of Psychiatry, Yale University, New Haven, CT 06520 **The neural and psychologic effects of lithium.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 67).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The central neurophysiologic and neuropsychologic effects of lithium are reviewed, and new findings from an intensive longitudinal study of 60 patients are reported. Bipolar, unipolar, schizoaffective, and schizophrenic patients were studied with repeated measurements of cerebral evoked responses, quantitied EEGs, neuropsychologic tests, and nursing ratings before, during, and after a doubld-blind lithium treatment trial. Changes produced by lithium in the amplitudes of the early and later somatosensory evoked responses, auditory evoked response, visual evoked response, slow EEG frequencies, alpha frequency, and in sensorimotor speed are discussed. Lithium-induced cortical synchronization and consequent reduced sensorimotor speed would be an obvious mechanism by which lithium could improve symptoms of hyperactivity and emotional excitement in mania. EEG monitoring for central lithium effects should be useful in the management of individual patients. (Journal abstract modified)

003885 Hinoki, M.; Nakanishi, K.; Ito, S.; Ushio, N; Ichibangase, T. Dept. of Otolaryngology, School of Medicine, Kyoto University, Sakyo Ku - Kyoto 606, Japan **""Neurotic vertigo" from the standpoint of neurology.** Agressologie (Paris). 19(4):269-285, 1978.

A new equilibrium test devised to analyze neurotic vertigo, particularly vertigo of psychosomatic origin, is discussed. A subject who showed development or increase in vertigo and ataxia after an injection of adrenaline, was injected with saline after being told it was adrenaline. The resulting changes in eye and body equilibrium function were examined by various equilibrium tests and compared with those induced by adrenaline itself. Results indicate that in tests on two types of vertiginous patients, cloxazolam, a minor tranquilizer, has beneficial effects on vertigo and disequilibrium. Several representative case studies illustrate the findings of overstimulation or pathology of CNS neural linkages. 22 references. (Author abstract modified)

003886 Imlah, N. W. Psychiatric Unit, All Saints' Hospital, Birmingham, England **The episodic nature of anxiety and its treatment with oxazepam.** Acta Psychiatrica Scandinavica. Supplementum 274:94-98, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The treatment of anxiety with oxazepam is discussed. It is asserted that since many patients experience fluctuating levels of anxiety, therapy should be intermittent, according to this waxing and waning of symptoms. Most benzodiazepines are long-acting, and are therefore unsuitable for this type of therapy, but oxazepam, which is short-acting and has no active metabolites, is ideal for this purpose. It is proposed that such a regimen would minimize the problems of oversedation, psychological habituation, and a reluctance, due to a permanently tranquilized state, to deal with the root causes of the anxiety. 20 references. (Author abstract modified)

003887 Kline, Nathan S.; Lehmann, Heinz. Dept. of Psychiatry, Columbia University, College of Physicians and Surgeons, New York, NY 10032 **Endorphin effects on human subjects.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 210).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The effects of beta-endorphin on human subjects, including healthy individuals and psychiatric patients suffering from depression and schizophrenia, are reviewed. Psychotropic effects are observable with most patients, and in some depressed patients, an immediate and dramatic lifting of depression occurs. With schizophrenics, both disinhibiting and euphorizing effects take place in minutes and therapeutic effects over longer periods of time. There seem to be disinhibiting effects with smaller doses and sedating effects with larger doses. Some possible models of the action of beta-endorphin are discussed. (Journal abstract modified)

003888 Lader, M. H. Institute of Psychiatry, Department of Psychiatry, London, England **The clinical pharmacology of oxazepam.** Acta Psychiatrica Scandinavica. Supplementum 274:89-93, 1978.

A paper presented at the Oxazepam Symposium titled Pharmacodynamic, Pharmacokinetic and Clinical Aspects on Oxazepam and Related Benzodiazepines held in Stockholm, November 1977, is provided. The effects of oxazepam on psychological functioning and the controversy regarding benzodiazepines and aggression are discussed. Ethical implications of the widespread use of these drugs is commented on, and the problem of dependence, physical and psychological, discussed. It is asserted that oxazepam is exceptional in that it is not associated with paradoxical release of aggression in patients and that it is less likely than other benzodiazepines to induce dependence. 32 references. (Author abstract modified)

003889 Lion, John R.; Bridgman, Eveleth W., Jr.; Regan, Bruce L.; Taylor, Ronald J. Department of Psychiatry, University of Maryland School of Medicine, Baltimore,MD **Psychiatrists' opinions of drug advertisements.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 26).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The results of a survey in which 50 psychiatrists were shown slides of advertisements for drugs are reported. A maximum of 36% of clinicians liked any one ad, while only 28% found any one ad informative. Generally, ads most liked and drugs most identified were those conceptualized in reminder type layouts with minimal texts. The aesthetics, ethics, and regulatory aspects of psychotropic drug advertising are discussed. 2 references. (Journal abstract modified)

003890 Loo, Henri; Dufour, Henry. no address **/Antidepressant and disinhibitory agents./** Antideprimant et des agents anti-ihibitoires. Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p., (p. 125).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Some antidepressant drugs are reviewed. Dibenzepine, opipramol, propizepine, clomipramine, viloxazine, maprotiline, mefexamide, pyrovalerone, and carpipramine are discussed. The activity of each drug is noted and possible chemical explanation supplied for differences among them. (Journal abstract modified)

003891 Marco, Luis A.; Randels, Patricia M.; Sexauer, James D. Medical University of South Carolina, Charleston, SC **Drug interactions with psychotropic agents.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 23-24).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. An updated summary of adverse and therapeutic drug interactions (DI) is provided in an effort to remind psychiatrists of psychotropic DI and the mechanisms involved to improve preventive or corrective measures. Benzodiazepines, thioridazine, chlorpromazine, central nervous system depressants, phenothiazines, monoamine oxidase inhibitors, amphetamines, levodopa, guanethidine, anticholinergics, antidepressants, reserpine, anticonvulsants, methyldopa, acetazolamide, alcohol, aminophiline, and barbiturates are among the substances discussed. It is concluded that a categorization of interactions can facilitate understanding. 2 references. (Journal abstract modified)

003892 Marco, Luis A.; Randels, Patricia M. Dept. of Psychiatry, Medical University of South Carolina, Charleston, SC **Succinylcholine drug interactions during electroconvulsive therapy.** Biological Psychiatry. 14(2):433-445, 1979.

Potential hazards of succinylcholine drug interactions during electroconvulsive therapy (ECT) are discussed. In addition to its neuromuscular blocking action, succinylcholine has other acetylcholine-like effects. Drugs which inhibit cholinesterase activity or which inhibit acetylcholine release or synthesis may produce prolonged respiratory paralysis when combined with succinylcholine. The increasing longevity of the population receiving chemotherapy for physical ailments implies that greater numbers of these patients may also become candidates for ECT and therefore be at risk for adverse drug interactions with succinylcholine. Of particular importance to the psychiatrist are the various psychotropic drugs that have been reported to interact with succinylcholine. Precautions in using drug combinations and treatment of complications are described. 48 references. (Author abstract modified)

003893 McKnew, Donald Jr. Department of Clinical Psychiatry, George Washington School of Medicine, Washington, DC 20037 **Use of psychotropic medication in adolescent psychiatry.** In: Novello, J., The short course in adolescent psychiatry. New York, Brunner/Mazel, 1979. 274 p. (p. 205-214).

The use of psychopharmacological drugs as an adjunct to adolescent psychiatry is explored by focusing on those management areas that differ from adult psychopharmacology. Topics discussed include: drug therapy in anorexia nervosa, depression, a review of neurochemistry, antidepressants, lithium, major and

minor tranquilizers, hyperactivity, sedatives, sleep medication, and the danger of addiction. It is argued that adolescents may be both more resistant to medication and more likely to abuse it than adults. 19 references.

003894 Morris, Louis A. Food and Drug Administration, Rockville, MD **The patient package insert: consumer education.** Psychopharmacology Bulletin. 15(2):58-60, 1979.

In a summary of a paper presented at the session on training/education issues in psychopharmacology at the Annual Meeting of the New Clinical Drug Evaluation Units of the NIMH, held in Key Biscayne, FL, May 1978, research strategies for the evaluation of patient package inserts (PPI) with psychotropic drugs are discussed. Noting that the demands of the consumerism movement and the demands of health professionals in evaluating therapeutic innovations are not identical, guidelines for evaluating PPIs are explored. It is contended that different type of drugs may need different types of inserts to benefit the largest number of people. 3 references.

003895 Muller-Oerlinghausen, B. Psychiatrische Klinik der Freien Universitat Bevlin, Nussbaum-Allee 36, D-1000 Berlin 19, Germany **Ethical problems in clinical psychopharmacology.** International Journal of Clinical Pharmacology and Biopharmacy. 16(10):443-450, 1978.

Investigation of psychotropic drugs in normal volunteers as well as in psychiatric patients is considered in relation to certain fundamental ethical aspects of medical research. It is emphasized that the solution of ethical problems cannot be achieved by referring to a given code of norms, but rather by recognizing and reasoning the conflicts which result from various moral maxims. Clinical psychopharmacology should be conscious of its methodological shortcomings and future goals, and should actively participate in ethical and legal questions involved in its activities. A relationship of solidarity, rather than paternalism, or legal formalism with the patient is urged. 24 references. (Author abstract modified)

003896 no author. no address **Stress, distress, and drug treatment.** Lancet (London). 2(8104):1347-1348, 1978.

A worldwide increase in the prescribing of antidepressants and tranquilizers, independent of national and political differences, is discussed. Some possible explanations include an improvement in the psychotropic drugs available and a change in the illness behavior of patients. Support for the explanation of a change in illness behavior comes from a nationwide survey of 2500 adults in the United States in which there were important differences in drug use betwen the sexes and at different ages. Another study has shown psychotropic drug use in nine Western European countries to be very similar to that in the United States. It is concluded that in view of the high prevalence of psychological distress, it is doubtful whether we shall see a fundamental change in medical management. 14 references.

003897 no author. no address **Pain placebos: often used to test or punish patients.** Medical World News. 20(6):32-33, 1979.

The results of a study showing that doctors use placebos to punish difficult patients or to prove a psychogenic cause when a patient is thought to be faking symptoms, are presented. Despite evidence that placebos can relieve pain through physiological mechanisms, it was show that doctors and nurses in two teaching hospitals in New Mexico were using them in situations where standard treatment was failing or when irritated by problem patients. General ignornance of placebo use is also reported.

003898 Oswald, Ian. Department of Psychiatry, University of Edinburgh, Edinburgh, Scotland **The why and how of hypnotic drugs.** British Medical Journal (London). No. 6172:1167-1168, 1979.

Considerations in the prescribing of hypnotics in sleep disturbance are delineated. Sleep complaints appear to be more common among women and introverted, nervous individuals and it is suggested that personality factors may influence the effects of the hypnotic. Initially hypnotics may make sleep less broken, start earlier, and last longer. Long-term use of benzodiazepines gradually leads to loss of those periods of sleep accompanied by very slow EEG waves, and most hypnotics reduce the duration of paradoxical (REM) sleep. Possible associations between hypnotics and anxiolytics and hormone secretion during sleep are discussed with reference to restorative functions of sleep. While benzodiazepines are relatively safe in overdose, they may impair social judgment and release aggression. Patients taking hypnotics should be educated to regard hypnotics as a temporary expedient. Regular exercise and avoidance of stimulating beverages in the evening can enhance normal nocturnal sleepiness. 27 references.

003899 Pakes, Gary E. Brotman Memorial Hospital, 3828 Delmas Terrace, Culver City, CA 90230 **Group medication counseling conducted by a pharmacist for severely disturbed clients.** Hospital & Community Psychiatry. 30(4):237-238, 1979.

A group medication counseling program for severely disturbed patients operated by a hospital pharmacy department, which operates to inform clients of effects and therapeutic importance of psychotropic medications, and which influences patient pharmacotherapeutic compliance, is described. In the group sessions, emphasis is place on promoting clients' self-expression as it relates to drug topics, and on verbal interaction among group members. The group leader uses nondirective methods of drug counseling, which help extend the time spent in meaningful communication. Typical patient concerns and complaints are described.

003900 Palmer, Gene C. Dept. of Pharmacology, University of South Alabama, College of Medicine, Mobile, AL 36688 **Neuropharmacology of cyclic nucleotides: role of cyclic AMP in affective disorders, epilepsy and modified behavioral states.** Baltimore, Urban & Schwarzenberg, 1979. 194 p.

Papers read at the symposium on Neuropharmacology of Cyclic Nucleotides held at Columbus, Ohio, August 1977, are presented and new data in the field are discussed. Topics explored include: dopamine sensitive adenylate cyclase in the brain; actions of neuroleptic agents on central cyclic nucleotide systems; cyclic AMP and adenylate cyclase in psychiatric illness; sensitivity of noradrenergically mediated cyclic AMP responses in the brain; neuropharmacological control of pineal gland cyclic nucleotide systems; genetic determination of cyclic AMP level in the brain and behavioral implications; effects of seizures and anticonvulsant drugs on cyclic nucleotide regulation in the CNS; cyclic nucleotide levels in brain during ischemia and recirculation; and microwave inactivation as a tool for studying the neuropharmacology of cyclic nucleotides.

003901 Palmer, Gene C.; Manian, Albert A. Dept. of Pharmacology, University of South Alabama, College of Medicine, Mobile, AL 36688 **Actions of neuroleptic agents on central cyclic nucleotide systems.** In: Palmer, G., Neuropharmacology of cyclic nucleotides. Baltimore, Urban & Schwarzenberg, 1979. 194 p. (p. 53-111).

A paper read at the symposium on Neuropharmacology of Cyclic Nucleotides held at Columbus, Ohio, August 1977, is presented. The state of knowledge on neuroleptic drug actions is discussed as follows: effects on dopamine sensitive, norepinephrine sensitive, and histamine sensitive adenylate cyclase sys-

tems in the central nervous system; effects of injections on subsequent alterations in adenylate cyclase systems; effects on other central mechanisms which involve adenylate cyclase/cyclic AMP; structure/activity relationships for phenothiazine actions on central adenylate cyclase; effects on hormonally sensitive adenylate cyclases in peripheral organs; effects on central cyclic GMP systems; and effects on central phosphodiesterases. Based on the extensive data presented, it is concluded that the two major actions of neuroleptic drugs on cyclic nucleotide systems appear to be: 1) a highly selective inhibition of the receptor site mediating both the dopamine-induced and to a lesser extent the norepinephrine-induced increase in cyclic AMP, and 2) a highly specific interaction of the calcium activated form (calcium dependent regulator protein) of phosphodiesterase. 231 references.

003902 Petursson, Hannes. Department of Psychiatry, Maudsley Hospital, Denmark Hill, London SE5 8A2, England **Prediction of lithium response.** Comprehensive Psychiatry. 20(3):226-241, 1979.

The literature on the various predictive indicators of response to lithium among psychiatric patients is reviewed. Factors which must be considered in pharmacologic prediction include dosage and plasma levels, absorption/excretion, erythrocyte/plasma lithium ratio, and divalent cations among individual patients. Demographic variables, personality traits, course of illness, number of episodes, treatment failure, family history, symptomatology, atypical features, and alcoholism are important factors which must be addressed in clinical prediction. Biologic predictors include amine metabolism, cholinesterase, ATPase, and autonomic evoked response. A clear diagnosis of a recurrent endogenous affective disorder is probably the most important predictor of a favorable response to lithium, and bipolar disorders respond better than unipolar ones. Serious inconsistencies and difficulty in controlling the major sources of variance suggest the need for caution in interpreting research data. 81 references.

003903 Pichot, Pierre; Guelfi, Julien Daniel; Dreyfus, Jean Francois; Pull, Charles; Brillet, Anne Marie Dubois. Cliniques de maladies mentales et de l'encephale, Paris, France **/Controlled clinical trials of psychotropic drugs in France./** Experiments en clinique controlles de medicaments psychotropes en France. Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 124-125).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Some French controlled trials of psychotropic drugs used in France but not in the United States are presented and discussed. Studies concerning the following drugs are reviewed: neuroleptics: Thioproperazine, Sulpiride, Sultropride; antidepressants: Viloxazine; anxiolytics: Clobazam, Lorazepam, Medazepam. (Journal abstract).

003904 Racer, Harley. Dept. of Family Practice and Community Health, University of Minnesota Hospitals, Minneapolis, MN **Psychopharmacology and family practice.** Minnesota Medicine. 62(2):91-95, 1979.

In a paper presented at a Symposium on 25 Years of Psychopharmacology, in Minneapolis, in June 1977, psychopharmacology and family practice over the previous years are discussed. During the 1950's, three trends developed in the treatment of mental illness: chlorpromazine was introduced into clinical practice, 80 medicines were listed in 1956 as treatment for emotional instability, and treatment of mental illness shifted from long-term institutionalization to outpatient and/or community hospitalizations. These trends meshed to change the impact of modern psychopharmacology on family practice. Family practitioners call on expert consultants to assist treatment. It is concluded that the evolution of family practice from general to family and community practice places the family practitioner in the position of assuming more responsibility for recognizing and managing significant mental and emotional disorders. 16 references. (Author abstract modified)

003905 Resnick, Richard B.; Schuyten-Resnick, Elaine; Washton, Arnold M. Dept. of Psychiatry, New York Medical College, 5 East 102nd Street, New York, NY 10029 **Narcotic antagonists in the treatment of opioid dependence: review and commentary.** Comprehensive Psychiatry. 20(2):116-125, 1979.

The clinical and experimental literature on the use of narcotic antagonists in the treatment of opioid dependence is reviewed, and implications for prevention and treatment of opiate addiction are discussed. The theoretical basis for the use of narcotic antagonists in treating opiate addiction is examined, and the variables of patient selection, treatment outcome, and research strategy and design are discussed. Narcotic antagonists are considered to be another approach that appears sufficiently efficacious to warrant making them available for use in all addiction treatment programs. The wide diversity of pathology and life situations among opiate addicts is emphasized. 50 references.

003906 Romer, Jurg; Bickel, Marcel H. Central Laboratory, Swiss Red Cross, Blood Transfusion Service, Wankdorfstrasse 10, CH-3000 Berne 22, Switzerland **Interactions of chlorpromazine and imipramine with artificial membranes investigated by equilibrium dialysis, dual-wavelength photometry, and fluorimetry.** Biochemical Pharmacology (Oxford). 28(6):799-805, 1979.

Binding of chlorpromazine and imipramine to liposomes of various synthetic lipids was investigated. As proved by equilibrium dialysis, liposomes of all investigated lipids bound chlorpromazine to a greater extent than imipramine. These results were confirmed by dual-wavelength photometry at low drug concentrations. This emphasized the importance of ionic interactions for the binding of imipramine to lipid membranes. Both chlorpromazine and imipramine had the same effect on the fluorescence of 1-anilino 8-naphthalene-sulfonate, whereas the fluorescence of perylene was quenched by chlorpromazine but not by imipramine. From the results obtained with the three complementary methods it is concluded that chlorpromazine binds to the surface of membranes and also penetrates into the inner hydrocarbon phase of the bilayer, whereas imipramine only binds near the surface of the liposomes. 30 references. (Author abstract modified)

003907 Ropert, Roger. Hopitaux psychiatriques de Paris, Paris, France **/Benzamides and related compounds./** Benzamides et composes similaires. Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 124).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Testing and use of derivatives of the substituted anisamide, or benzamide, series in France in the past 10 years are discussed. Clopramide, Sulpiride, Sultopride, and Tiapride are covered. All these substances are considered a fourth major family of neuroleptic compounds, their neuroleptic activities are specified, and their side-effects are noted. (Journal abstract modified)

003908 Rowlett, David; Dudley, Donald; Early, Ronald; Welke, Elton. Harborview Medical Center, Seattle, WA **Emergency use of intravenous haloperidol.** Continuing medical educa-

tion: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 59).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The use of intravenous haloperidol for emergency patients whose medical treatment is impeded by psychiatric problems is described. Ten male and four female patients, aged 31 to 64, were treated with intravenous haloperidol during one 12 month period. The psychiatric problems varied from schizophrenia and mania to organic brain syndrome. Medical problems included multiple injuries, fractures, burns, alcohol cirrhosis, and life threatening arterial bleeding. In every case, enough reversal was obtained within 10 to 30 minutes with doses varying from 1 to 15mg to continue medical tratment. There were no adverse reactions and minimal side-effects. In balancing the risks and benefits of rapid control of behavior which is potentially fatal, the use of intravenous neuroleptics is indicated for a small but critical group of patients. 2 references. (Journal abstract modified)

003909 Salzman, Carl. Harvard Medical School, Massachusetts Mental Health Center, Boston, MA **Pharmacologic treatment of the functional disorders of the elderly.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 5).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. The treatment of depression, anxiety, psychosis, and psychomotor agitation in the elderly with psychopharmaceuticals and ECT is discussed. Basic principles including pretreatment evaluation, sensitivity to the possibility of drug interaction, and anticholinergic hazards of polypharmacy for the elderly are reviewed. The treatment of depression includes discussion of tricyclic pharmacokinetic blood levels, tricyclic overdose in the elderly, and special precautions for ECT with the elderly. Similar considerations are discussed with reference to the treatment of agitation and anxiety. It is concluded that as the number of elderly citizens increases, the need to solve these treatment problems increases also. (Journal abstract modified)

003910 Schoolar, Joseph C.; Claghorn, James L. Texas Research Institute of Mental Sciences, Houston, TX **The kinetics of psychiatric drugs.** New York, Brunner/Mazel, 1979. 324 p.

Papers read at the 11th Annual Symposium on the Kinetics of Psychiatric Drugs, held in Houston, November 1979, are presented. The metabolic and kinetic patterns of the commonly used psychotropic drugs and the implications of these patterns for treatment are explored. It is argued that the new drugs used for treating patients are also tools for understanding psychiatric disorders. Effective drug therapy for many major emotional disorders has provided psychiatric research the ability to propose and to test hypotheses, making psychiatry a scientific discipline for the first time. Psychopharmacological theories and areas of investigation that bear on new approaches to treatment are identified and discussed. Implications for future clinical research and theory construction are viewed in terms of the merging of clinical and research practices and the necessity of the medical psychiatrist.

003911 Schroeder, Nancy H.; Caffey, Eugene M., Jr.; Lorei, Theodore W. 810 Vermont Avenue, N.W., Washington, DC 20420 **Antipsychotic drugs: can education change prescribing practices?** Journal of Clinical Psychiatry. 40(4):186-189, 1979.

The effects of educational techniques, such as articles and videotapes on the prescribing practices of physicians with antipsychotic drugs were examined at 42 Veterans Administration Hospitals. An attempt was made to change prescribing practices so that they were more in conformity with current recommendations. The two major findings of the study were that there was less polypharmacy (less use of antiparkinson drugs and less use of antiparkinson drugs for longer than 6 months) and that there were no statistically significant differences among educational groups. It is concluded that at many VA facilities there are concerned physicians attempting to integrate research results into their practice in order to provide better patient care. 14 references. (Author abstract modified)

003912 Schwalb, H.; Eckmann, F.; van Eimeren, W. Institut f. d. Prophilaxe d. Kreislaufkrankheiten, Pettenkoferstr. 9, D-8000 Munich 2, Germany **/ECG changes in psychiatric patients under long-term therapy with psychopharmacological agents./** EKG-Veranderungen bei psychisch Kranken unter Langzeittherapie mit Psychopharmaka. Fortschritte der Neurologie, Psychiatrie und ihrer Grenzgebiete. 46(9):484-490, 1978.

Within the scope of an epidemiological study on risk factors and coronary heart diseases, 1726 mentally ill patients, 40 to 69 years old, under permanent hospitalization were examined using an electrocardiograph (ECG). There were few pronounced indications of a relationship between pathological ECG findings and psychopharmacological agents. ECG changes were rarest among patients treated exclusively with nontricyclic drugs and most frequent among those patients who received tricyclics and nontricyclics simultaneously. There was a connection with lesser pathological changes in the rest and load ECGs (T-flattening), and these disturbances appeared more often among women. A reciprocal effect between sex and the influence of psychopharmacological agents appeared on the ECG. As contrasted to males, females under treatment with tricyclic or with several psychopharmacological agents simultaneously showed more ECG changes than those treated without medication. 18 references. (Journal abstract modified)

003913 Schwartz, Harvey J. 907 Lombard Street, Philadelphia, PA 19147 **Tardive dyskinesia and the long-term patient.** Hospital & Community Psychiatry. 30(7):465-467, 1979.

The symptoms, diagnosis, epidemiology, and treatment of tardive dyskinesia are discussed through the use of a composite case history. A psychiatric patient's long-term use of antipsychotic medication often results in the irreversible movement disorder, tardive dyskinesia. A number of drugs have been used to treat the disorder, but so far none has been effective. It is suggested that while tardive dyskinesia cannot be cured at this time, it may be prevented by treating psychoses with the lowest possible dose of the least toxic drug for the shortest length of time. 9 references. (Journal abstract)

003914 Shader, Richard I.; Greenblatt, David J. Psychopharmacology Research Laboratory, Harvard Medical School, Boston, MA 02115 **Pharmacokinetics and clinical drug effects in the elderly.** Psychopharmacology Bulletin. 15(2):8-14, 1979.

In a summary of a paper presented at the session on diagnosis and treatment in geriatric psychopharmacology of the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the clinical and experimental research literature on the pharmacokinetics and clinical effects of psychotropic drugs in the elderly are reviewed. In general, studies comparing the drug reaction of young and elderly human Ss demonstrate the following effects of aging: 1) prolongation of drug elimination half-life values, 2) reduction in total drug clearance, 3) inconsistent changes in volume of distribution, and 4) no change in affinity of drugs for serum proteins. An examination of pharmacokinetic

data for benzodiazepine derivatives is presented to illustrate the complexities of these issues. 50 references.

003915 Simon, P.; Peron-Magnan, P.; Fermanian, J.; Pichot, P. no address **/Methodological problems in a comparative study of long-acting neuroleptics and classical neuroleptics./** Problemes methodologiques d'une etude comparee de neuroleptiques d'action prolongee et de neuroleptiques classiques. Psychologie Medicale. 10(1):145-152, 1978.

Methodological problems were examined in a comparative study of long-acting neuroleptics and classical neuroleptics involving 181 patients. The results show no significant difference between the two types of therapy. Statistical analysis of the data is described. Three themes are discussed: the pragmatic type of experiment, the characteristics of the inquiry, and methods of statistical analysis. Results indicate the problems of the comparative method which, it had been hoped, would offer certain and simple information. (Journal abstract modified)

003916 Skegg, D. C. G.; Richards, S. M.; Doll, Richard. Department of the Regius Professor of Medicine, University of Oxford, Oxford OX2 6HE, England **Minor tranquillisers and road accidents.** British Medical Journal (London). 1(6168):917-919, 1979.

The relationship of tranquilizer prescriptions issued by general practitioners over 2 years to records of hospital admissions and deaths was investigated. For 57 people injured or killed while driving cars, motorcycles, or bicycles, the medicines that had been dispensed in the 3 months before were compared with those dispensed for 1425 matched controls. There was a highly significant association between use of minor tranquilizers and the risk of a serious road accident. 17 references. (Author abstract modified)

003917 Smith, Bernard H.; Rosich-Pla, Antonio. 462 Grider Street, Buffalo, NY 14215 **The biochemistry of mental illness.** Psychosomatics. 20(4):278-279, 282-283, 1979.

Current biochemical theories of the major psychoses (affective disorders and schizophrenia) are briefly reviewed. It is contended that understanding of the biochemical basis of mental disease has been greatly advanced by pharmacologic observations on new drugs that have been found to alter mood or to mimic or ameliorate psychoses, and by increasing knowledge of neuroregulators and modulators. Topics discussed include: the catecholamine hypothesis of affective disorder, the cholinergic/adrenergic hypothesis, and neurotransmitter function. 7 references. (Author abstract modified)

003918 Smith, R. Jeffrey. no address **Study finds sleeping pills overprescribed.** Science. 204(4390):287-288, 1979.

A report issued by the Institute of Medicine (IOM) of the National Academy of Sciences concluded that sleeping pills are more dangerous and less useful than was previously believed. It is suggested that barbiturates and benzodiazepines are both hazardous especially when prescribed for consecutive nights. Barbiturates are stongly addictive and lethal in overdose. Benzodiazepines are addictive and remain in the body for long periods, gradually increasing the amount of the drug in the patient's system. It is suggested that research on the effects of benzodiazepine administration is inadequate. Physician training with respect to sleeping disorders and the prescribing of sleeping pills is also viewed as inadequate and misleading. Rather than ban the sale of barbiturates and benzodiazepines or increase federal regulation, it is suggested that physicians restrict their prescribing of the drugs.

003919 Soskis, David A.; Jaffe, Richard L. School of Medicine, Temple University, Philadelphia, PA **Communicating with patients about antipsychotics.** Continuing medical education: syllabus and proceedings in summary form. Washington, DC, American Psychiatric Assn., 1978. 321 p. (p. 213-214).

A summary of a paper read at the 131st Annual Meeting of the American Psychiatric Association, held in Atlanta, May 1978, is presented. Consumer issues related to antipsychotics are examined from the points of view of those who prescribe and those schizophrenic patients who take the medications. When doctor and patient ratings were paired, there was agreement about whether the medication had helped, but generally low congruence between what a psychiatrist rated as the value of communicating with patients about specific aspects of medication and what his patients actually ended up knowing about these aspects. The highest levels of congruence were on those aspects considered most important, and which might profitably be explored with each patient by clinicians concerned with compliance: why the medication was being given and what were its side-effects. 2 references. (Journal abstract modified)

003920 Soskis, David A.; Jaffe, Richard L. Dept. of Psychiatry, Temple University School of Medicine, Philadelphia, PA 19140 **Communicating with patients about antipsychotic drugs.** Comprehensive Psychiatry. 20(2):126-131, 1979.

In a study of communication between physician and patient concerning antipsychotic drugs, male inpatient schizophrenics and their physicians were interviewed concerning physicians$ attitudes toward antipsychotic drugs and patient knowledge, compliance, and therapeutic response. A lack of congruence between what psychiatrists thought they should transmit to their patients and what they actually did, was noted. No relationships between physician-patient communication variables and patient compliance were found. 13 references.

003921 Swazey, Judith P. Dept. of Socio-Medical Sciences, Boston University School of Medicine, Boston, MA **Chlorpromazine's entrance into psychiatry.** Minnesota Medicine. 62(2):81-85, 1979.

In a paper presented at the Symposium on 25 years of Psychopharmacology, in Minneapolis, in June 1977, the entrance of the drug chlorpromazine into psychiatry is discussed. The synthesis of chlorpromazine (CPZ) in 1950 grew out of nearly a century of research in areas unrelated to the drug therapy of mental disease states. The discovery and testing of CPZ's use in psychiatry, in turn, also resulted from work in various research and clinical arenas, including surgery and the treatment of Parkinson's disease, as well as psychiatry. Many of CPZ's psychotropic successors have followed comparable paths of entry into psychiatry. It is concluded that chlorpromazine's synthesis and entrance into psychiatry exemplify the complex processes of scientific discovery and therapeutic innovation. (Author abstract modified)

003922 Tu, Jun-Bi. Ongwanada Hospital, 752 King Street, West, Kingston, Ontario K7L 4X3, Canada **A survey of psychotropic medication in mental retardation facilities.** Journal of Clinical Psychiatry. 40(3):125-128, 1979.

Results of a questionnaire survey of psychotropic drug usage at five regional residential centers for the mentally subnormal in Eastern Ontario, Canada are described. Of 2238 residents studied, 42% were given psychotropic medication, 27% received anticonvulsants, and 11% received a combination of both. Prolonged medication and polypharmacy were observed in all facilities. The therapeutic responses to psychotropic medication were generally poor, especially among the disturbed epileptics who had received psychotropic and anticonvulsant medication

simultaneously. It is estimated that between one half to two thirds of those on psychotropics were given the agents too liberally. 22 references. (Author abstract modified)

003923 van der Kleijn, Eppo; Vree, T.; Guelen, P.; Schobten, F.; Westenberg, H.; Knop, H. Dept. of Clinical Pharmacy, Sint Radboud Hospital, Catholic University of Nijmegen, Nijmegen, The Netherlands **Kinetics of drug interactions in the treatment of epilepsy.** International Journal of Clinical Pharmacology and Biopharmacy 16(10):467-473, 1978.

The interactions of antiepileptic drugs in multiple drug treatment are discussed, and the kinetics of the interactions of antiepileptic drugs with various biogenic conditions and/or drugs are described. It is claimed that although some combinations may lead to predictable increase or decrease of clearance of the respective drugs, most combinations will lead to reduced predictability. Monitoring plasma concentrations may lead to adaptations of the choice of the drug and of the dosage regimen. Physiological conditions influencing the individual clearances of antiepileptic drugs are discussed. 24 references. (Author abstract modified)

003924 Watts, Rosalyn J. University of Pennsylvania School of Nursing, Graduate Division, Adult Health Program, Philadelphia, PA 19104 **The physiological interrelationships between depression, drugs, and sexuality.** Nursing Forum. 17(2):168-183, 1978.

The physiology of the interrelationships between depression, drugs, and sexuality is described, and the implications for nursing practice are discussed. Topics discussed include: the impact of the depressive state on sexuality; pharmacological actions of selected prescription and illegal drugs on the sexual system (including antihypertensives, antihistamines, oral contraceptives, antidepressant agents, alcohol, heroin, methadone, cocaine, and marihuana); and neurophysiological components of sexual responsivity. It is noted that inquiry into the sexual functioning of patients has enhanced the quality of the rehabilitation program for those who value sexual interaction as an important aspect of their lives. 21 references.

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